ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED WASTE RECOVERY PLANT AT HIGHVELD STEEL NEAR WITBANK, MPUMALANGA

Socio-Economic Impact Assessment
Final Report
April 2021

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Disclaimer:

Information contained in this report was based on the last information received from Savannah Environmental Pty Ltd on the 4th of March 2021. Where data supplied by the client or other external sources, including previous site investigation data, have been used, it has been assumed that the information is correct unless otherwise stated. No responsibility is accepted by Urban-Econ Development Economists for incomplete or inaccurate data supplied by others. We are aware of the fact that there might have been changes since this report was submitted; however, this report and its findings is based on the last information received from the client on the 4th of March 2021. To the best of our knowledge the assumptions and findings are correct at the time of submission of the specialist reports. Should any of the assumption or findings prove to be incorrect subsequent to submission of the report we as the specialist cannot be held accountable.

Celebrate Development Diversity.

Version:

Final version

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ABBREVIATIONS

CAGR	Compounded Average Growth Rate
CSI	Corporate Social Investment
DM	District Municipality
EIA	Environmental Impact Assessment
EMF	Environmental Management Framework
ELMIDP	eMalahleni Local Municipality Integrated Development Plan
GDP	Gross Domestic Product
GDP-R	Gross Domestic Product per Region
HDI	Human Development Index
I&AP	Interested and Affected Parties
IDP	Integrated Development Plan
IDZ	Industrial Development Zone
IPAP	Industrial Policy Action Plan
IRP	Integrated Resource Plan
LED	Local Economic Development
LM	Local Municipality
NDMIDP	Nkangala District Municipality Integrated Development Plan
NDP	National Development Plan
NEA	Not Economically Active
NGPF	New Growth Path Framework
MEGDP	Mpumalanga Economic Growth and Development Path
SAERRP	South African Economic Reconstruction and Recovery Plan
SDF	Spatial Development Framework
SMME	Small, Medium and Micro Enterprises
VAT	Value Added Tax

1. INTRODUCTION

This document is prepared by **Urban-Econ Development Economists** (Urban-Econ) in response to a request by **Savannah Environmental (Pty) Ltd.** (Savannah Environmental) to undertake a Socio-Economic Impact Assessment for the proposed small-scale waste recovery plant at the Highveld Steel complex in the Mpumalanga Province. The study is conducted as part of the Environmental Impact Assessment (EIA) process managed by Savannah Environmental.

1.1 Brief description of the project

Anglo African Metals (Pty) Ltd. proposes the development of small industrial waste recovery plant at the Highveld Steel industrial complex in the eMalahleni Local Municipality (LM), Mpumalanga. The facility will be developed with an aim of reducing waste from mineral beneficiation activities while contributing to job creation and economic development in the region.

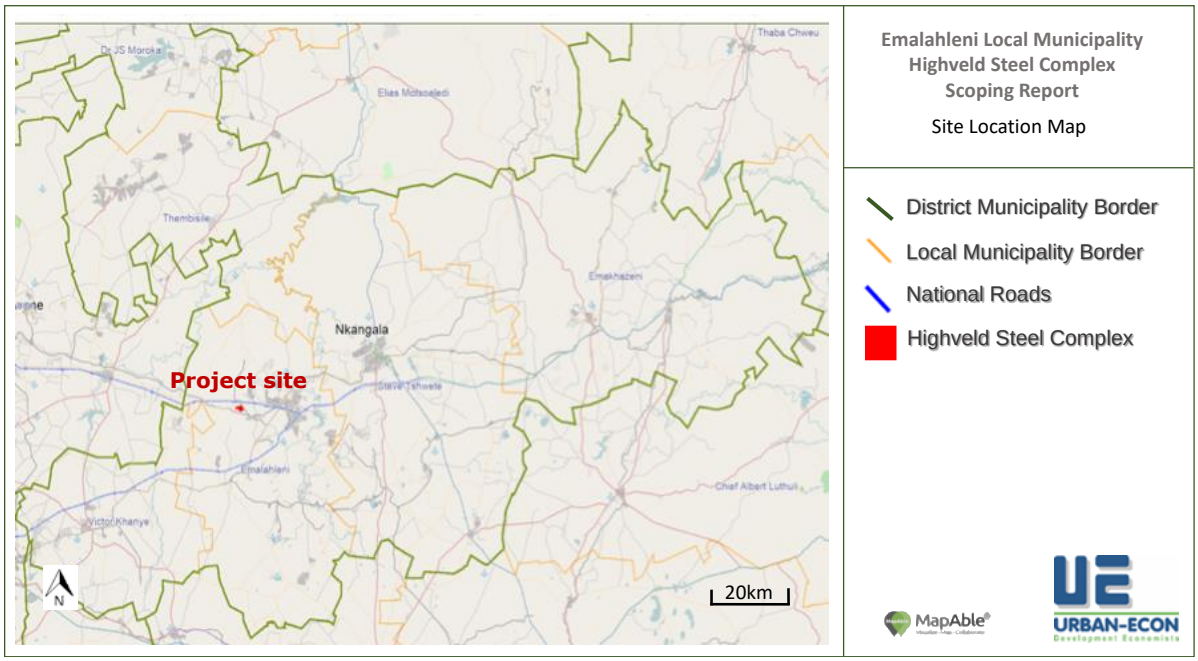
The process employed at the proposed plant will simultaneously extract vanadium and titanium oxides, aluminium as aluminium oxide (Al_2O_3), magnesium as magnesium oxide (MgO), and calcium as calcium sulphate/gypsum ($CaSO_4$) from slag materials from Highveld Steel. The proposed plant will have a processing capacity of 2000 tonnes of tailings/slag per month, which amounts to approximately 3 tonnes per hour.

The main infrastructure associated with the facility includes the following:

- A chemical plant area where all the necessary process chemicals are produced, stored and handled as necessitated by the waste recovery process;
- A substation and plant utility unit that will be utilised as interface and control unit for the electricity used by the plant during operations;
- Slag stockpile;
- Crushing plant and mill;
- A product area for the storage of various products produced during the recovery process;
- A reagent area for the handling and storage of reactants used in the recovery of waste;
- A fuel storage area which houses a fuel storage tank of up to 700m^3 for the bulk storage of gas needed for the waste recovery process;
- Security area;
- Parking lot;
- Control and administrative room which will include offices and ablutions for the staff.

The proposed waste recovery plant is located approximately 17 km west of the eMalahleni city within the eMalahleni LM and is accessed directly off the R104 route from the N4 near the Kwa-Guqa informal settlement. Located in Highveld Steel Industrial Park No. 1230 JS

within the eMalahleni LM, a development area of 4 ha has been allocated to the waste recovery facility.



Map 1.1: Location of the proposed waste recovery plant

1.2 Scope and purpose of the study

The socio-economic impact assessment contains information that, together with other specialists, allows assessment of the project from a sustainable development perspective and assists in identifying "the most practicable environmental option" that provides the "most benefit and causes the least damage to the environment, at a cost acceptable to society", in the long-term and the short-term. Considering the above and in line with the Environmental Impact Assessment (EIA) Regulations of 2014, the purpose of the socio-economic impact assessment is to assess the need and desirability of the project. It specifically aims to ensure that the project, if approved, provides for justifiable social and economic development outcomes. As such, it aims to:

* identify, predict, and evaluate geographical, social, economic, and cultural aspects of the environment that may be affected by the project activities and associated infrastructure; and
* advise on the alternatives to best avoid negative impacts or allow to manage and minimise them to acceptable levels, while optimising positive effects.

The specific objectives of the study include:

* Engage with the environmental practitioner, other specialists on the team and the client to gain necessary background on the project;
* Delineate the zone of influence in consultation with other specialists on the team;
* Determine the affected communities and economies located in the zone of influence and identify sensitive receptors within the delineated study area, i.e. communities,

land uses and economic activities that could be directly or indirectly negatively affected by the proposed project or benefit from it;

- Review secondary data and assess data gaps;
- Collect primary social and economic data of the parties that may be directly or indirectly affected (positively or negatively) by the proposed project to address data gaps;
- Create profiles for the communities and economies representing the study areas and the environmentally affected zone;
- Assess the need and desirability of the project and its alternatives in line with the specified guidelines;
- Identify, predict, and evaluate the potential positive and negative impacts associated with the project following the environmental specialist's methodology;
- Advise on the most suitable alternative, inclusive of the "no-go" option; and
- Develop a mitigation plan by proposing mitigation measures for negative effects and enhancement measures for positive impacts.

1.3 Methodology

The following methodological approach was adopted for conducting the socio-economic impact assessment:

1. **Orientation:** The study started with gaining an understanding of the proposed project during various stages of its lifecycle and the potentially affected environment. A review of various data and maps provided for the project, as well as discussions with the project team, informed the delineation of the potential zone of influence associated with each component of the project. The delineated zone of influence defined the spatial boundaries of the area to be included in the assessment and assisted in identifying likely impacted and beneficiary communities and economic activities, as well as other stakeholders of the project.
2. **Policy alignment review:** Relevant government policies and other strategic documents were gathered and reviewed to determine the alignment of the proposed project with the strategic plans of various government spheres and highlight any potential red flags, if such exist.
3. **Baseline profiling:** Following policy review, primary and secondary data were gathered to create the socio-economic profile of the delineated zone of influence. The baseline profile assisted in gaining an understanding of the communities and economic activities likely to be affected or benefit from the proposed project. This included the description of the study area's composition and locational factors, economic and labour profiles, way of life of communities located within the zone of influence, their demographic trends and cultural references, their health and wellbeing, and their living environment. Specific attention was paid to the socio-economic composition of the area affected by the project's footprint and its potential environmental effects, i.e., visual, noise, air pollution, etc.
4. **Impact analysis and evaluation**: Derived from the review of the project and its need and desirability is the list of various negative and positive socio-economic impacts that can ensue because of the proposed activity during various stages of

its life cycle. All identified socio-economic impacts were assessed and categorised in line with the rating provided by the environmental specialist (refer to Annexure A).

5. **Formulation of mitigation and enhancement measures:** Following the analysis and ranking of impact, mitigation, and enhancement measures, where applicable, were formulated whereby recommendations to reduce or eliminate the potential negative effects on the affected parties and enhance positive impacts were provided.

1.4 Data gathering, consultation process, assumptions and limitations

Due to the remote location of the project relative to settlements and high-density economic activities, the assessment during the socio-economic impact assessment relies on primary and secondary data obtained from various engagements, documents and databases. Primary data gathering by means or interviews with various Interested and Affected Parties (I&APs) was conducted between the 23rd of February 2021 and the 24th of March 2021.

1.4.1 Secondary data analysed

The following data sources were considered:

* Stats SA Census, 2011
* Stats SA Labour Force Survey
* Quantec Research Standardised Regional Data, 2010-2019
* Integrated Development Plans (IDPs)
* Spatial Development Frameworks (SDFs)
* National and provincial strategic documents.

The project is not envisaged to be located near the concentration of any of the sensitive receptors (i.e., households, farms, tourism facilities, etc.) as the proposed facility will be constructed in an already established industrial park. Despite the aforementioned, engagements with I&APs were conducted in order to ensure that possible societal and commercial concerns were recognised.

1.4.2 Primary data collected

The primary data gathering for this project was done via virtual interviews in adherence with Covid-19 regulations. The following I&APs were consulted as part of the primary data collection phase:

I&AP	Position of respondent	Contact person	Means of engagement
Anglo African Metals (Pty) Ltd	Project owner	A Pocock	Virtual interview 23 February 2021
Anglo African Metals (Pty) Ltd	Project owner	J Omitogun	Virtual interview 23 February 2021

I&AP	Position of respondent	Contact person	Means of engagement
Afrox ASU Witbank	Plant manager at Witbank ASU: Operations (adjacent property)	D Ngakane	Virtual interview 8 March 2021
Federation for a Sustainable Environment	Chairperson	M Liefferink	Virtual interview 9 March 2021
Brokkr (Pty) Ltd	Financial Manager	C Jevone	Virtual interview 24 March 2021

1.5 Assumptions, limitations and gaps in knowledge

The following section outlines the key assumptions that form the basis of the assessment and discussions of the study:

* The secondary data sources used to compile the socio-economic baseline (demographics, dynamics of the economy) although not exhaustive, can be viewed as being indicative of broad trends within the study area.
* The study was done with the information available to the specialist within the time frames and budget specified.
* Possible impacts and stakeholder responses to these impacts cannot be predicted with complete accuracy, even when circumstances are similar, and these predictions are based on research and years of experience, taking the specific set of circumstances into account.
* It is assumed that the motivation, and ensuing planning and feasibility studies for the project were done with integrity and that all information provided to the specialist by the project proponent and its consultants to date is accurate.
* Regarding the virtual interviews undertaken, it is assumed that questions asked during the interviews were answered accurately and that the attitudes of the respondents towards the proposed project will remain reasonably stable over short- to medium-term.
* The economic modelling was done using the data provided by the client. Any changes to the assumptions concerning the expenditure during construction and operational phases would have implications on the economic assessment. However, these are unlikely to result in changes to the significance ratings.

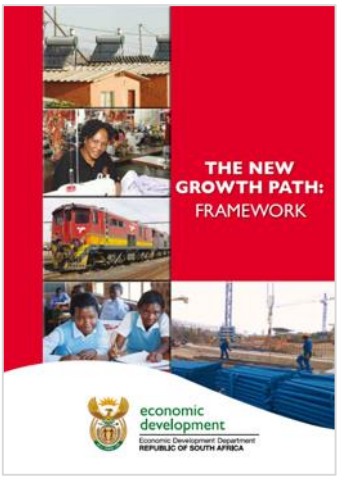
2. POLICY REVIEW

A policy review plays an integral role in the initial stages of a project. The review provides an indication of whether a project is aligned with the goals and aspirations of the developmental vision across the three spheres of government. The policy analysis signposts any red-flags or developmental concerns that could jeopardise the development of the project and assists in amending it, preventing costly and unnecessary delays.

The following government strategic documents applicable to the delineated study areas were examined:

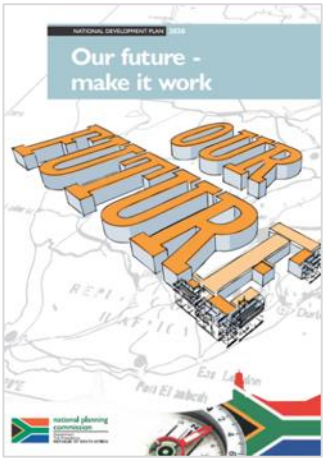
* **National (South Africa):**
  - New Growth Path Framework (NGPF) (2011)
  - National Development Plan (NDP) 2030 (2011–2030)
  - South African Economic Reconstruction and Recovery Plan (SAERRP) (2020)
  - Industrial Policy Action Plan (IPAP) (2018/19–2020/2021)
  - A Beneficiation Strategy for the Minerals Industry of South Africa (2011)
* **Regional (the Mpumalanga Province):**
  - Mpumalanga Economic Growth and Development Path (2011)
  - Draft Green Economy Plan (2016)
  - Mpumalanga Industrial Development Plan (2016)
* **Local (the Nkangala DM and eMalahleni LM):**
  - Nkangala District Municipality Integrated Development Plan 2017/18-2021/22
  - eMalahleni Local Municipality Integrated Development Plan 2020/21
  - eMalahleni Spatial Development Framework (SDF) 2015.

2.1 Project alignment with National policies and strategic documents



The **New Growth Path Framework (NGPF) (2011)** was developed to ensure that economic policy in South Africa reflects the importance of job creation to address the key issues the country faces, such as joblessness, poverty and inequality. The aim of the NGPF is to restructure the economy of South Africa to improve its performance not only in composition and growth rates, but also in terms of labour absorption.

One of the identified means of achieving this objective is through the increase in local processing of South Africa's natural resources. As one of the key sectors in which employment is created, the manufacturing sector has been targeted to create 350 000 jobs by 2020 by the NGPF. The NGPF therefore supports and promotes the investment into the mineral beneficiation and manufacturing sectors to encourage activities that may lead to large-scale employment generation. The NGPF further emphasises the importance of job creation in the green economy.



Informed by the objectives outlined by the NGPF, the **National Development Plan (NDP) 2030** aims to eliminate poverty and reduce inequality by 2030 through the identification of different sectors that play a pivotal role in its effective implementation. The manufacturing sector has been identified as one of the key sectors in which job creation may be promoted and the NDP encourages the development of local manufacturing.

The importance of stimulating business activity, such as labour-intensive manufacturing close to dense townships, has been highlighted in the NDP to encourage job creation in areas in which unemployment is prevalent. Another goal outlined in the NDP is South Africa's transition to an environmentally sustainable, climate-change resilient, low carbon-economy, which is envisaged through a zero-waste society. The NDP highlights the importance of recognising major opportunities in the manufacturing sector, such as waste reutilisation, and aims to promote the technical capacity of clean technologies that may provide the country with growth opportunities in the carbon-constrained global economy. The NDP emphasises the need for industrial manufacturing to move towards greener industries over time.

In response to the outbreak of the COVID-19 pandemic, the South African Government developed the **South African Economic Reconstruction and Recovery Plan (SAERRP) (2020)** in an attempt to mitigate the economic impact of the pandemic on the local economy and fast track its recovery. In addition, the SAERRP will also attempt to redirect the South African economy to achieve the objectives set out in the NDP 2030. The SAERRP aims to create and support over 800 000 employment opportunities, unlock more than R1 trillion in infrastructure investment, and provide enabling conditions and a supportive policy environment for an accelerated and transformative reconstruction of the South African economy. In addition, the SAERRP aims to consolidate local and industrial production in order to promote South African exports.

According to the SAERRP, policy interventions include aggressive infrastructure development, strategic localisation of employment and export orientated production activities, and green economy interventions. High impact priority areas in terms of green initiatives as outlined in the SAERRP include support for Small, Medium and Micro Enterprises (SMMEs) to take advantage of economic opportunities within the green economy to promote a local labour-intensive industry and a sustainable value chain.

The development of the **Beneficiation Strategy for the Minerals Industry of South Africa (2011)** was informed by the NGPF's identification of mineral beneficiation being one of the priority areas in which employment opportunities may be created. The Beneficiation Strategy aims to create a competitive advantage in the mineral sector on the basis of the existing comparative advantage associated with the mineral resource endowments in the country. The Beneficiation Strategy aligns itself with other national industrialisation programmes that aim to improve the quantity and quality of exports, promote the creation of decent employment and diversify the economy.

Given the low levels of mineral beneficiation in the country, the aim of the Beneficiation Strategy is to place focus on developing mineral value chains in South Africa to facilitate the expansion of beneficiation initiatives in the country. Although the country has seen some expansion in value-addition facilities such as manufacturing and mineral processing, the Strategy seeks to further increase South Africa's capacity to export goods that are not only ores or semi-processed goods.

The **Industrial Policy Action Plan (IPAP) 2018/19-2020/21** is guided by government's overall policy objectives to promote economic and industrial growth and address the key challenges identified therein, such as poverty, inequality and unemployment. The objective of the IPAP is to promote long-term industrialisation and industrial diversification in South Africa in the midst of a global deindustrialisation. The IPAP therefore aims to reindustrialise the South African economy to double exports through a number of interventions to support transformation within the industry. This radical economic transformation is guided by its objective of creating sustainable jobs, particularly for the marginalised and most vulnerable in society.

The manufacturing sector has been identified as a priority area to lead the way for IPAP's objectives. Furthermore, greater waste management has been pinpointed to be vital in the meeting of these objectives and the IPAP promotes the recycling of manufacturing by-products to meet South Africa's objective of becoming a zero-waste society.

2.2 Project alignment with Provincial policies and strategic documents

Fostering economic growth that creates jobs and reduces poverty and inequality in the Mpumalanga Province is the main goal of the **Mpumalanga Economic Growth and Development Path (MEGDP) (2011)**. The Provincial Government of Mpumalanga has set to achieve the following between 2011 and 2021 (Mpumalanga Provincial Government, 2011):

- Reduce the unemployment rate from 28% in 2011 to 15% in 2021 through the creation of approximately 719 000 jobs
- Increase the income level of 620 000 individuals above the poverty line
- Increase the Human Development Index (HDI) from 0.50 by increasing literacy levels from 40 000 individuals per annum to 63 000 individuals per annum and life expectancies from 51 years to 62 years
- Reduce the Gini-coefficient from 0.65 to 0.55 by 2020
- Increase the economic growth rate to between 5 and 7 per cent per annum to achieve the targets listed above.

The MEGDP outlines the importance of the manufacturing industries in the Mpumalanga Province as one of the largest contributors to the provincial economy and one of the biggest absorbers of employment (Mpumalanga Provincial Government, 2011). The manufacturing sector is therefore considered critical to the economic growth and job creation objectives set out in the province. The Provincial Government of Mpumalanga has targeted the creation of 47 000 jobs in the manufacturing sector and intends to target sectors that ensure beneficiation, invest in industrial infrastructure to encourage enterprise development, and recruit technology and skills from outside the borders of Mpumalanga, amongst others.

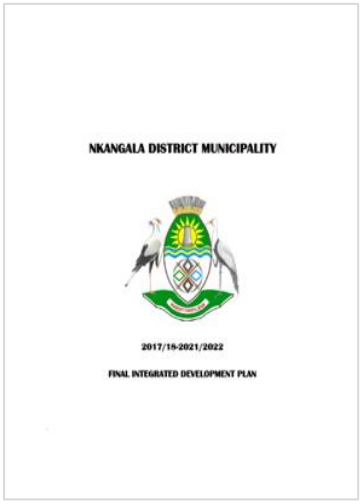
In the MEGDP, the Mpumalanga Provincial Government also highlights the importance of its transition to a green economy and has placed its focus on developing a Clean and Green Development Strategy to fulfil Mpumalanga's contribution to transitioning South Africa to a low-carbon economy.

In 2016, Mpumalanga drafted a **Green Economy Sector Plan**, which identified four core implementation pillars. One of these pillars related to green towns and urban centres and focused on expansion of recycling activities and waste beneficiation. Although the proposed project is not directly linked to the priorities identified in the Draft Green Economy Plan, it does support the overall vision of transition towards a green economy.

A greater emphasis on the industrialisation activities is articulated in the **Mpumalanga Industrial Development Plan (2016)**, which sets "a clear commitment towards industrialisation by the Provincial Government, through enabling infrastructure development and resource allocation, among others". The plan proposes the establishment of the Mining and Metals Industrial Centre of Competence in the region of eMalahleni and Middleburg, where the proposed project is to be located. The Centre of Competence is envisaged to be situated in a technology park, which is likely to be situated outside the location of the proposed project. Nonetheless, these plans emphasise the concentration of mining and mineral activities, knowledge and technologies that the area,

where the proposed project is located, currently possess. This suggests that the proposed development is generally in line with the provincial industrial vision for the area.

2.3 Project alignment with Local policies and strategic documents



The developmental objectives set in the **Nkangala District Municipality Integrated Development Plan (NDMIDP) 2017/18-2021/22** include the alleviation of poverty, promotion of infrastructural development, and creation of employment opportunities by developing the physical, socio-economic and institutional environment in the district. As manufacturing is one of the sectors which dominates the economic base of the district, the NDMIDP targets further diversification of manufacturing activities as a key source of achieving the objectives of the NDMIDP.

The development plan specifically emphasises that industrial areas such as Columbus Steel in Steve Tshwete and Highveld Steel in eMalahleni should be maintained and enhanced through service maintenance and upgrading programmes. Furthermore, the NDMIDP recommends that developmental focus be placed on these areas, which already contain industrial infrastructure for future manufacturing and industrialisation. The NDMIDP also calls for development and mainstreaming of the green economy and as such, the development of green jobs.

The **eMalahleni Local Municipality Integrated Development Plan (ELMIDP) 2021/22** sets out to empower the communities within the municipality by facilitating an environment, which fosters sustainable economic development and social transformation. The eMalahleni LM aims to provide spatial transformation and social cohesion, sustainable and affordable services, clean administration and good governance, financial viability and socio-economic growth and a safe environment.

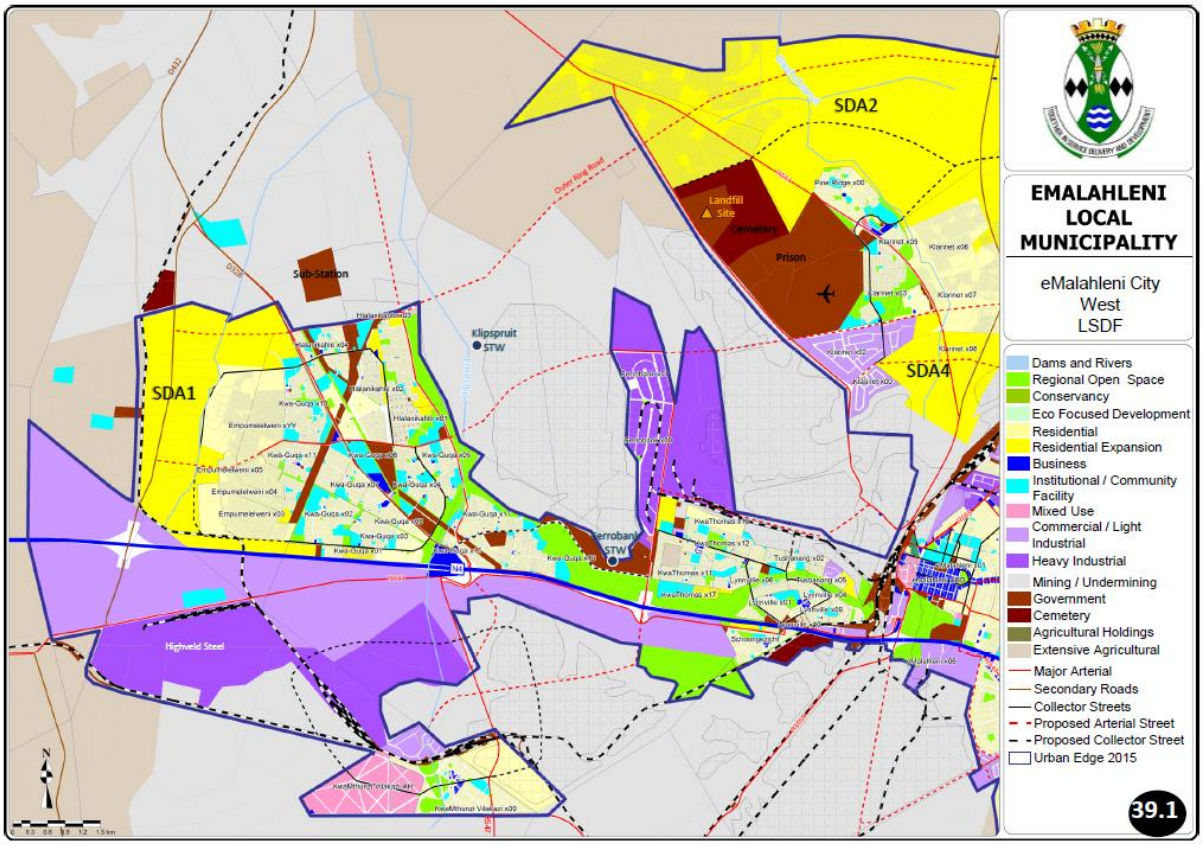
The municipality has identified comparative advantages in the mining, manufacturing, and utilities sectors, and has placed substantial focus on the development of projects and skills in these sectors. The ELMIDP also provides for the strong support of existing industrial and manufacturing activities and recommends that new industrial development be consolidated along the N4 and N12 Development Corridors, which is the area where the proposed project is to be developed. The ELMIDP supports economic development to the south of the N4 and route R104 adjacent to the Highveld Steel park in order to fully utlise the regional road network.

In addition, in association with the proposed project, the following strategic objectives have been identified as set out in the ELMIDP:

* To create a clean, healthy and safe sustainable environment;
* To promote spatial concentration and facilitate, manage and control integrated land use and spatial planning;
* To create an attractive and conducive environment for sustainable economic development and tourism.

Furthermore, the ELMIDP also realises the importance of the Highveld Steel operations where the proposed facility is to be located and the revitalisation thereof to an industrial park. In summation, the economic enhancement of the Highveld Steel industrial park is expected to contribute to the Local Economic Development (LED) of the eMalahleni LM and augment its economic capacity to attain the socio-economic objectives set out in the ELMIDP.

The **eMalahleni Spatial Development Framework (SDF) (2015)** provides for further insight into the developmental and land zoning objectives for the area, where the proposed project is to be developed. As indicated in **Map 2.1**, the SDF shows that the project is to be located within the area that is zoned for heavy industrial land use. Considering the nature of the project, its location is in direct alignment with the current spatial development vision for the area.



Map 2.1: Local SDF (eMalahleni LM, 2015)

Overall, it can be concluded that the proposed project is in alignment with the local and provincial developmental policies and spatial frameworks. The project is anticipated to contribute to the economic capacity of the regional economy and the alleviation of

unemployment in the eMalahleni LM and therefore facilitate the attainment of the identified socio-economic objectives. The project is also expected to make a contribution toward the achievement of the national developmental objectives related to industrialisation, mineral beneficiation, waste management, and the green economy.

3. BASELINE PROFILE

This chapter examines key socio-economic characteristics of the study area. This is essential as it provides both qualitative and quantitative data relevant to the communities and economies under observation and creates a baseline that will assist in identifying the sensitive receptors and potential impacts.

The following socio-economic indicators are analysed in this chapter:

» Spatial Compositions and Land-Use
» Demographic Profiling
» The Economy and its Structure
» The Labour Force and Employment Structure
» Status of Infrastructure.

3.1 Study area's composition and locational factors

Spatial context and regional linkages

The small industrial waste recovery plant proposed by Anglo African Metals (Pty) Ltd. is planned to be located in Highveld Steel industrial complex in the eMalahleni LM within the Nkangala DM in the Mpumalanga Province. The Mpumalanga Province is located north of the Kwazulu-Natal Province, sharing borders with eSwatini and Mozambique in the east (Mpumalanga Provincial Government, 2017). The Mpumalanga Province is the second smallest province in South Africa at 76 495 km^2, comprising 6.5% of South Africa's total land area (Global African Network, 2017). With a population of approximately 442 867, Mpumalanga is South Africa's third most densely populated province after KwaZulu-Natal and Gauteng, with approximately 60 people per square kilometre (Quantec, 2020f). The Mpumalanga Province is divided into three district municipalities (DMs) – Ehlanzeni DM, Gert Sibande DM and Nkangala DM – which contain 18 local municipalities collectively.

As outlined in **Figure 1**, the Nkangala District comprises six local municipalities, namely Victor Khanye LM, eMalahleni LM, Steve Tshwete LM, Emakhazeni LM, Thembisile Hani LM, and Dr JS Moroka LM. Covering a total area of 16 756 km^2, the Nkangala DM makes up 22% of the Mpumalanga Province's land mass and has a population of approximately 1 572 051 (Nkangala District Municipality, 2017b; Quantec, 2020d). The Nkangala DM is abundant with minerals and natural resources and is said to be at the economic hub of the Mpumalanga Province. The Nkangala DM is host to the Maputo Corridor, which brings further opportunity for its economic growth (Nkangala District Municipality, 2017b). The economy of the Nkangala DM is driven by electricity, manufacturing and mining (Nkangala District Municipality, 2017b).

Figure 1: The six municipalities located in the Nkangala District Municipality
(Municipalities of South Africa, 2018)

The eMalahleni LM has a geographical area of approximately 2 677 kms^2 and consists of a number of towns, including Balmoral, Clewer, Coalville, Hlalanikahle, Kendal, Kriel, Kwa-Guqa, Lynnville, Matla, Minnaar, New Largo, Ogies, Paxton, Phola, Rietspruit, Thubelihe, Van Dyks Drif, Wilge, and eMalahleni (Nkangala District Municipality, 2017a). The eMalahleni LM contains one of the major urban concentrations in the Nkangala DM and the Municipality Province as a whole (Nkangala District Municipality, 2017a).

Predominantly an industrial area, the eMalahleni LM contains 27 economic hubs consisting of 883 businesses with main sectors such as manufacturing, trade, transport and finance and community services (Nkangala District Municipality, 2017a). Further aiding its economic development, the eMalahleni LM is located close to Gauteng with the N4 and N12 national roads facilitating transportation of goods manufactured in the municipality (Nkangala District Municipality, 2017a). The eMalahleni LM is considered a "gateway municipality" into the province for all but one of the nine provinces in South Africa (eMalahleni Local Municipality, 2016).

<u>Major towns and settlements</u>

The proposed waste recovery plant is to be located within the Highveld Steel complex. The closest towns to this complex are Kwa-Guqa and KwaMthunzi Vilakazi (formerly known Clewer), which are approximately 5.9 kilometres and 7 kilometres from the proposed site, respectively.

- Kwa-Guqa is a township located north of the proposed project site and separated from it by an open space and the N4 national road.

- KwaMthunzi Vilakazi is settlement comprising of agricultural holdings and a township, which is older than the town of eMalahleni itself. It is located close to the Kendal Power Station and is surrounded by a number of collieries and mines.

Locational factors and major tourism attractions

Featuring mainly underground and opencast mines, the eMalahleni LM is considered to be the most industrialised LM in the Nkangala DM (eMalahleni Local Municipality, 2016). The eMalahleni LM possesses the largest concentration of power stations in the country and is thought to be the "energy heartbeat" of South Africa (eMalahleni Local Municipality, 2016).

While eMalahleni is known for its coal mines and power stations, the municipality is in the process of rebranding itself as the tourist destination by taking advantage of its tourism resources, such as the Witbank Nature Reserve and the Ezemvelo Nature Reserve, which are currently weekend tourist attractions for Gauteng residents (eMalahleni Local Municipality, 2016).

Sense of place, history and cultural aspects

Established in 1903, the town of eMalahleni (Witbank) was named after a ridge of white rock located near the present railway station, which was a halting place for transport wagons and a place of trading (eMalahleni LM, 2015). The principal language in the eMalahleni LM is Zulu, followed by Afrikaans and Northern Sotho.

The LM's concentration of industrial activities is reflected in its heritage places that exhibit a rich historical background, specifically industrial and military history, architectural and engineering sites and historical gravesites (eMalahleni Local Municipality, 2016). The town has a number of cultural heritage sites, such as the Battle of Bakenlaagte site, Clewer railway station and the Roodebloem farmstead.

The town of Kwa-Guqa is host to a number a valuable heritage resources including historical church buildings and houses, the Indian Cemetery and structures associated with mining activities (eMalahleni LM, 2015). The conservation and protection of these heritage places, especially those around the town of eMalahleni and Kwa-Guqa, have been identified as a priority for government (eMalahleni Local Municipality, 2016).

3.2 Demographic Profile

The population of any geographical area is the cornerstone of the development process, as it affects the economic growth through the provision of labour and entrepreneurial skills and determines the demand for the production output. Examining population dynamics is essential in gaining an accurate perspective of those who are likely to be affected by any prospective development or project. This sub-section describes the status quo of the study area's population.

Population Demographics

In 2019, the eMalahleni LM had a population of approximately 477 938 people comprising of 145 605 households (Quantec, 2020f). The average household size of in the region was approximately 3.3 people during the year (Quantec, 2020f). The eMalahleni LM has the

second largest population concentration in the Mpumalanga Province and accounts for the largest proportion of population in the Nkangala District, as well as the highest population growth in the District (Emalahleni Local Municipality, 2016; Quantec, 2020d).

Of the total population, 84.9% are Black African and 12.7% are White, with the remaining 2.4% being Coloured, Indian or Asian (Quantec, 2020f). The majority of residents in the municipality fall in the 30 to 44 age category (30.0%), followed closely by the 15 to 29 age category (27.0%) (Quantec, 2020e). The male population exceeds that of the female population by approximately 9.2 percentage points (Quantec, 2020e).

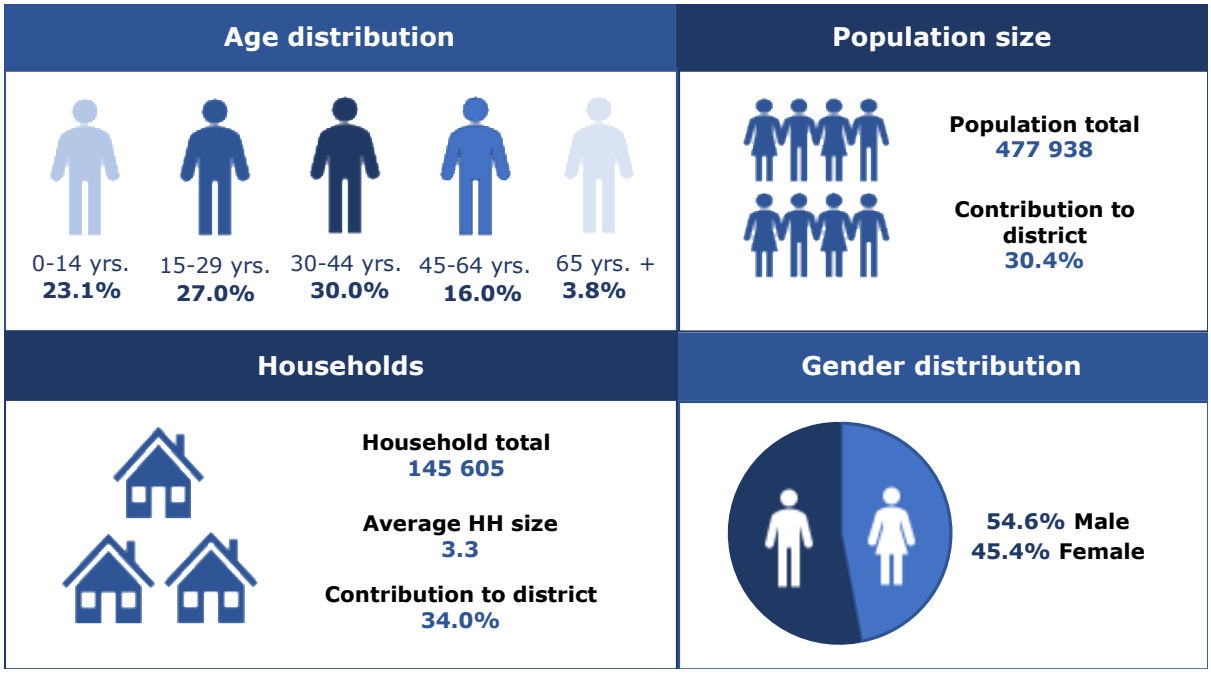


Figure 2: Population demographics of eMalahleni Local Municipality, 2019 (Quantec, 2020e; 2020f)

The demographic profile in the eMalahleni LM is indicative of the economic structure of the municipality and its historical development, which was dependent on the establishment of the mining and electricity generation sectors. Areas that have a relatively large presence of the mining sector tend to have a higher proportion of male population. Population within a working age group due to the settlement structures are designed to accommodate a single living, working male population employed in the mining sector.

Income Levels

According to the Census 2011[1], nearly half of households (46.0%) in the eMalahleni LM earned between R0 and R3 200 a month, with over 9 161 households (6.5%) having no source of income (Stats SA, 2011). In 2012, the average annual household income in the eMalahleni LM was ranked third after Steve Tshwete and Govern Mbeki (eMalahleni Local

[1] It should be noted that the use of 2011 data is due to the unavailability of the more recent data on income levels at a local municipality level.

Municipality, 2016). However, it could be argued that due to the proximity of the location of the municipality relatively to the economic hubs of Ekurhuleni and Johannesburg, many of the higher income groups of households who have members working in the municipality reside outside the eMalahleni LM.

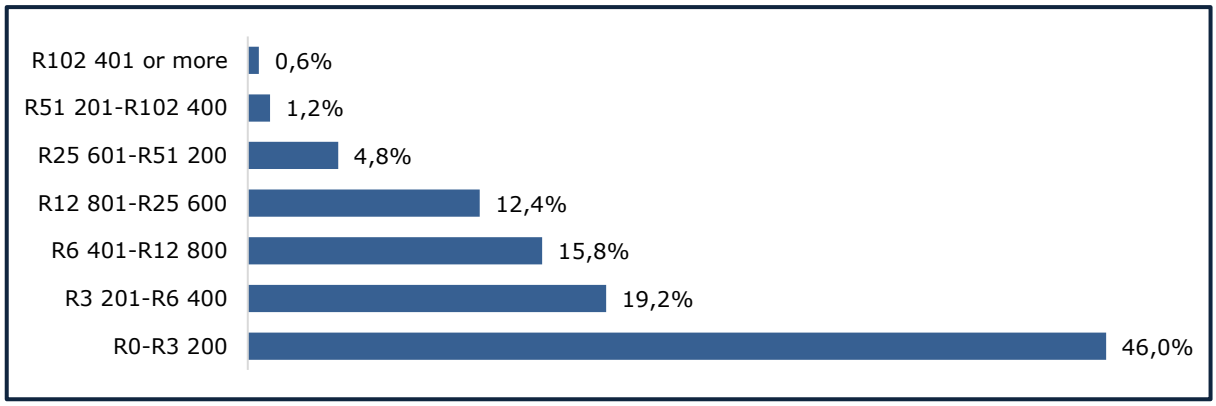


Figure 3: Income levels of households in eMalahleni Local Municipality, 2011
(Stats SA, 2011)

Education Levels

As indicated in **Figure 4**, 5.5% of adults aged 20 and above in the eMalahleni LM have no formal schooling whatsoever as of 2019 (Quantec, 2020d). Approximately 9.0% of adults have some primary schooling; 4.1 per cent of adults have only completed primary schooling (Quantec, 2020d).

The majority of adults in the region have at least some secondary schooling (35.5%), while 30.1% of the adult population have obtained a matric certificate. Approximately 13.3% of adults aged 20 and above in the eMalahleni LM have obtained a higher education qualification, with 10.8% having obtained a diploma or certificate and 2.5% having obtained at least a Bachelor's degree. The low to moderate levels of education correlates with the types of industries which comprise the economic base of the municipality, such as the mining industry that is known to have many low- to semi-skilled workers.

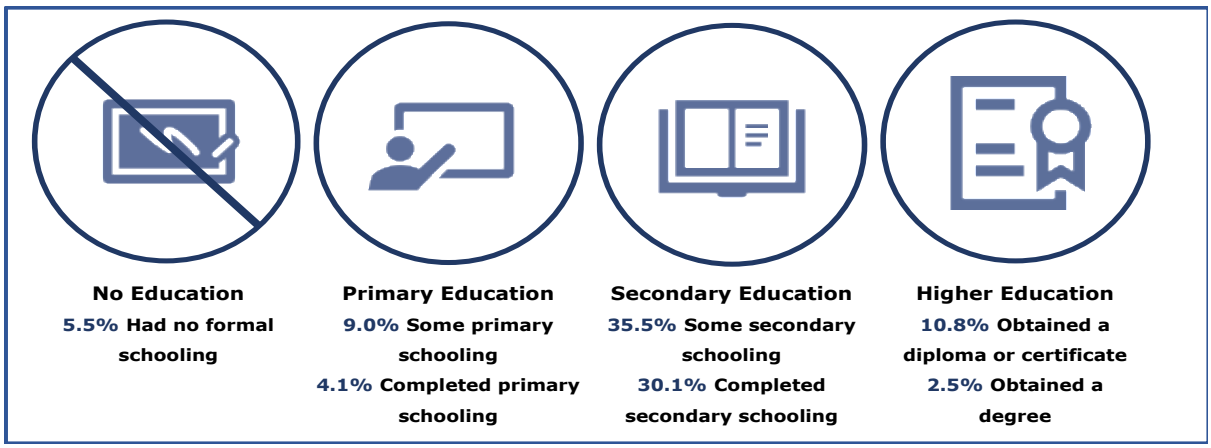


Figure 4: Level of education in the eMalahleni Local Municipality, 2019 (Quantec, 2020d)

3.3 The Economy

In 2019, the eMalahleni LM's economy was valued at R45 826 million (in current prices), contributing 13.4% to Mpumalanga Province's total economy's gross value added (GVA) (Quantec, 2020g). Accounting for nearly half of this value (47%), the mining and quarrying sector was by far the biggest contributor to the municipality's economy in 2019. The sector with the highest economic growth rate, though, was the construction sector with a Compounded Annual Growth Rate (CAGR) of 4.3% between 2010 and 2019. Over the same period, the manufacturing and electricity, water and gas sectors contracted by 0.4% and 0.5%, respectively.

Table 3-1: Structure of economies for the Mpumalanga Province and eMalahleni Local Municipality

Industry	Mpumalanga Province			eMalahleni Local Municipality		
	GVA (R millions)	% of GVA	CAGR	GVA (R millions)	% of GVA	CAGR
	2019	2019	2010-2019	2019	2019	2010-2019
Agriculture, forestry and fishing	8 778	3%	1.4%	277	0%	2.8%
Mining and quarrying	84 044	25%	1.3%	36 983	47%	0.7%
Manufacturing	44 307	13%	0.8%	6 428	8%	-0.4%
Electricity, gas and water	26 194	8%	-0.4%	11 768	15%	-0.5%
Construction	10 180	3%	0.8%	2 060	3%	4.3%
Wholesale and retail trade, catering and accommodation	50 143	15%	1.3%	6 273	8%	1.3%
Transport, storage and communication	22 254	7%	1.6%	3 510	4%	2.6%
Finance, insurance, real estate and business services	38 914	11%	2.2%	6 211	8%	2.4%
General government	43 457	13%	1.9%	4 489	6%	2.3%
Community, social and personal services	13 459	4%	1.2%	1 496	2%	0.6%
Total	**341 732**	**100%**	**1.3%**	**45 826**	**100%**	**0.9%**

Source: Authors' calculations based on Quantec (2020g)

3.4 Labour Force and Employment Structure

Employment is the primary means by which individuals who are of working age may earn an income that will enable them to provide for their basic needs and improve their standard of living. As such, employment and unemployment rates are important indicators of socio-economic well-being. The following paragraphs examine the study area's labour market from a number of perspectives, including the employment rate and sectoral employment patterns.

Labour Force Composition

Of the total working age population in the eMalahleni LM, approximately 47.7% were employed in 2019 (Quantec, 2020c). However, as 110 264 individuals were not economically active (NEA)[2], the municipality had an unemployment rate of 30.3% during the year.

Table 3-2: Labour force profile for Mpumalanga, Nkangala and eMalahleni, 2019

Indicators	Mpumalanga	Nkangala	eMalahleni
Working age population	2 972 524	1 067 976	348 972
Non-economically active	1 249 023	438 287	110 264
Labour force	1 723 500	629 689	238 707
Employed	1 184 438	419 698	166 457
Unemployed	539 062	209 991	72 250
Unemployment rate	31.3%	33.3%	30.3%
Labour participation rate	58.0%	58.7%	68.4%

Source: Authors' calculations based on Quantec (2020c)

The unemployment rate in the eMalahleni LM in 2019 was slightly lower than in the Nkangala District and the Mpumalanga Province with unemployment rates of 33.3% and 31.3%, respectively. The labour participation rate of the eMalahleni LM was approximately 10 percentage points higher than that in the Nkangala DM and Mpumalanga Province during the year. These findings are in line with eMalahleni LM being the "economic hub" of the province.

Employment Structure

The mining and quarrying sector accounted for the largest percentage of jobs created in the eMalahleni LM in 2019, with 29% of the employed population in the municipality being absorbed by this sector (Quantec, 2020a). The next highest contributor to employment during the year was the wholesale and retail trade, catering and accommodation sector, accounting for 16% of total jobs in the region. The agriculture, forestry and fishing sector was the eMalahleni LM's smallest contributor to employment in 2019 at 2%.

[2] NEA persons are those who are not actively seeking employment due to various reasons including being discouraged to look for employment opportunities.

Table 3-3: Sectoral contributors to employment in eMalahleni LM, 2019

Industry	Mpumalanga Province		Nkangala District Municipality		eMalahleni Local Municipality	
	Employment	% of total	Employment	% of total	Employment	% of total
Agriculture, forestry and fishing	136 244	12%	17 288	4%	2 875	2%
Mining and quarrying	114 441	10%	72 458	17%	48 817	29%
Manufacturing	94 908	8%	34 332	8%	13 987	8%
Electricity, gas and water	11 214	1%	6 600	2%	4 311	3%
Construction	83 723	7%	35 747	9%	13 030	8%
Wholesale and retail trade, catering and accommodation	252 293	21%	80 398	19%	27 233	16%
Transport, storage and communication	47 265	4%	18 437	4%	6 280	4%
Finance, insurance, real estate and business services	135 401	11%	48 396	12%	18 644	11%
General government	129 369	11%	38 878	9%	12 162	7%
Community, social and personal services	179 580	15%	67 164	16%	19 118	11%
Total	**1 184 438**	**100%**	**419 698**	**100%**	**166 457**	**100%**

Source: Authors' calculations based on Quantec (2020a)

Approximately 20% of the employed in the eMalahleni LM were active in the informal sector in 2019. Of the remaining 80% employed in the formal sector, approximately 17% were considered skilled workers, while the majority of workers (62%) in eMalahleni LM were classified as semi-skilled. Low-skilled workers accounted for approximately 21% of employment in the municipality in 2019.

3.5 Status of infrastructure and basic service delivery

Access to basic service delivery and infrastructure are indicators that assist in understanding the standard of living of the households residing in the study areas. Comprehension of the extent to which households in the area have access to water, sanitation, and electricity assists in the understanding of communities' living standards and their needs. The availability of service infrastructures such as roads, educational and health facilities, etc., further indicates the nature of the study area, which is valuable in developing a complete profile of the circumstances in which communities are living.

Basic service delivery

In 2019, 72.8% of households in the eMalahleni LM had **access to electricity**. Of the households who did not have access to electricity, 23.9% utilised candles for lighting while the remaining households made use of paraffin, gas, solar and other unspecified sources for lighting (Quantec, 2020b).

The majority of the population (88.3%) in the eMalahleni LM had **access to piped water** within 200m of their dwelling in 2019, with 53.9% and 25.0% having access to piped water inside their dwelling and inside their yard, respectively. Approximately 8.6% of individuals who did not have access in their dwelling or yard had access to piped water within 200m of their dwelling; 6.1% of households had access to piped water beyond 200m from their dwelling. The remaining 5.4% made use of other water sources, such as boreholes, rainwater tanks, wells, watercarriers, water vendors and other unspecified sources.

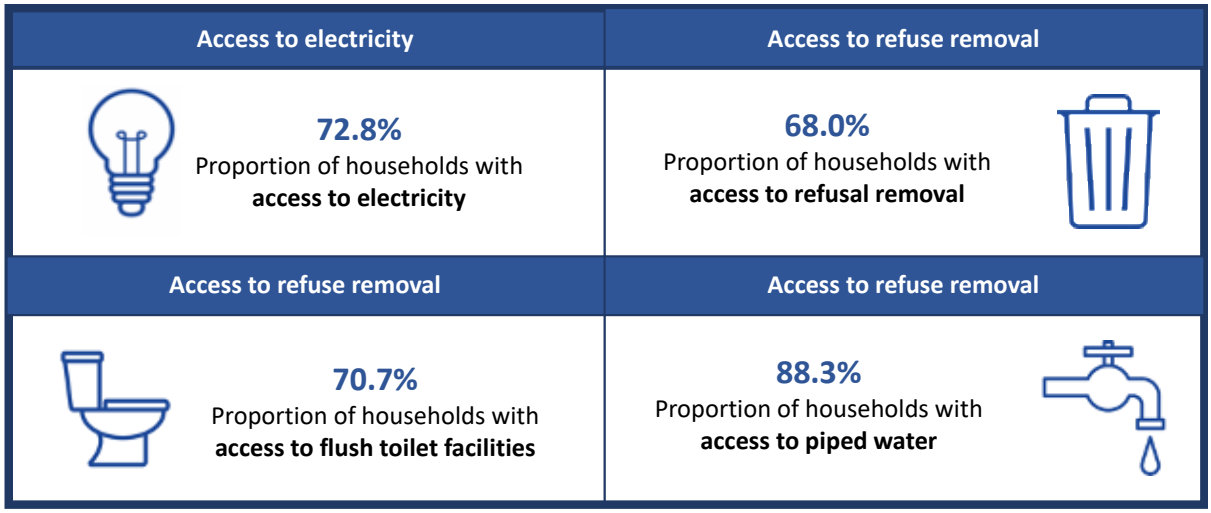


Figure 5: Access to services in the eMalahleni LM, 2019

In 2019, 68.0% of the eMalahleni LM population had **refuse removal** done by their local authority, with approximately 66.6% having their refuse removed by the local authority at least once a week. Other means of refuse removal in the municipality included the use of their own rubbish dump (21.3%) and communal refuse dumps and other unspecified means (3.8%). The remaining 7.0% of residents in eMalahleni LM did not have access to refuse removal.

Approximately 70.7% of households in the eMalahleni LM had access to a flush or chemical toilet in 2019. The other toilet facilities, pit latrine and bucket latrines, were used by 24.7% of households in eMalahleni. Approximately 4.6% of the population in the region had no toilet facilities in 2019. This may be an indication of a **sanitation** problem in the municipality.

Status of social facilities

The eMalahleni LM boasts a number of **healthcare** facilities. The municipality has six hospitals, 15 fixed clinics and three mobile clinics (eMalahleni LM, 2020). There is at least one clinic in every town. It has been suggested, however, that due to the population size

in Lynnville, Kwa-Guqa and Hlalanikahle, there may be a need for the development of more clinics.

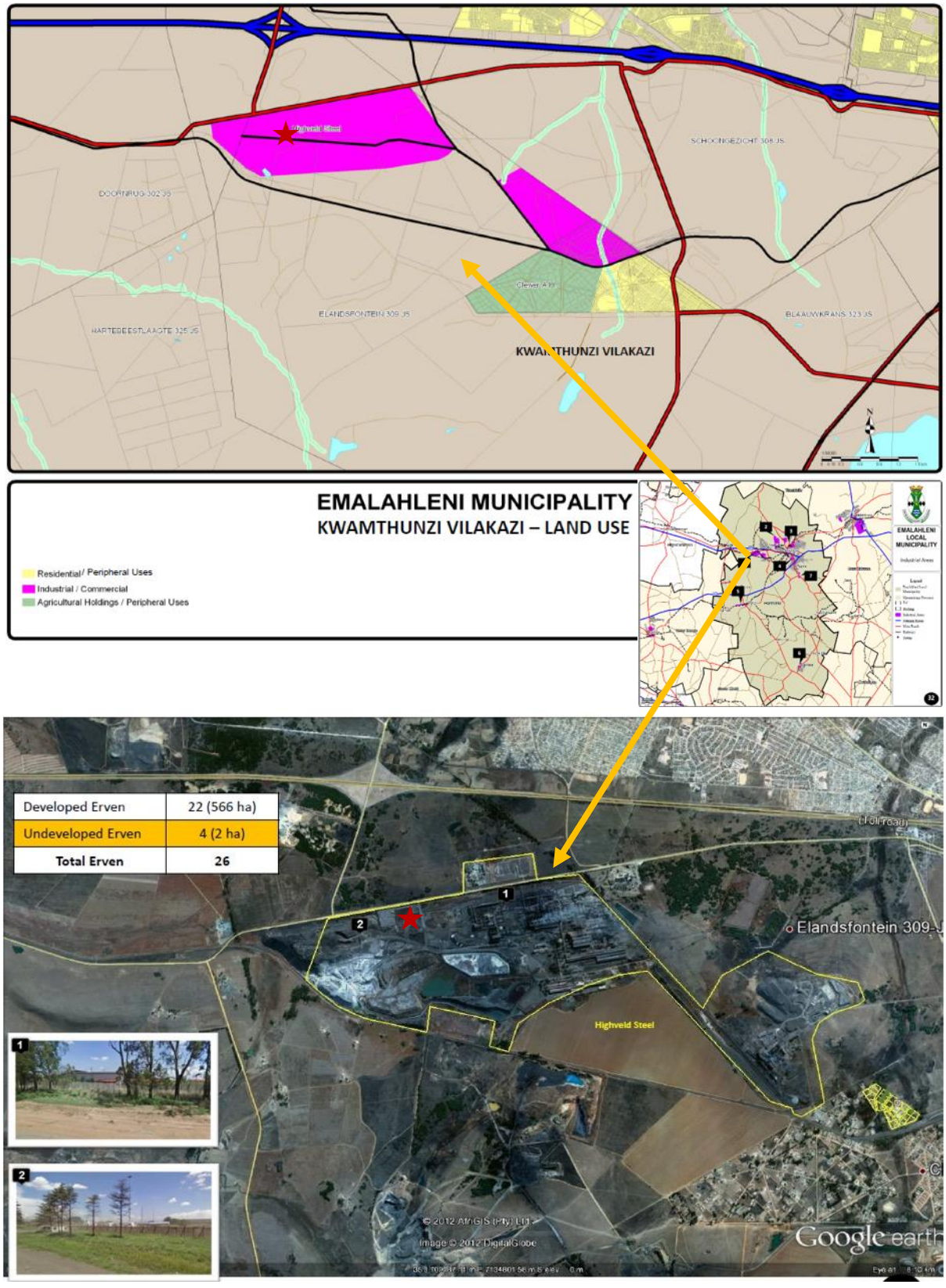
In terms of **safety**, the municipality has a total of five police stations in eMalahleni, Kriel, Phola, Vosman and Ogies (eMalahleni LM, 2019). However, safety remains a matter of concern in the municipality as there is a high prevalence of crime due to a large number of unemployed youth and drug abuse in the community. The establishment of satellite police stations have been identified as a need in many communities in the region (eMalahleni LM, 2020).

As of 2015, the eMalahleni LM has 34 preschools, 58 primary schools and 19 secondary schools, with an identified lack of **education** facilities in Hlalanikahle (eMalahleni LM, 2015). In terms of higher education, there are four tertiary facilities in the municipality, namely the Tshwane University of Technology, Pretoria University, UNISA and eMalahleni College (eMalahleni LM, 2015). The municipality also has other tertiary institutions such as the Mpondozankomo Technical College in Ackerville and the Coal Training College in Klipfontein. The development of additional adult basic education and training (ABET) and other skills training facilities in the municipality has been identified to be necessary to improve the socio-economic status of the population given the low literacy and employment levels.

4. SITE RELATED INFORMATION: ZONE OF INFLUENCE BASELINE

The site-related information section investigates the various dynamics of the proposed site. **Map 4.1** indicates the current land uses of the proposed project site and its surroundings. As of 2015, the eMalahleni LM has six major industrial areas, which consist of approximately 591 developed and 279 vacant industrial erven (eMalahleni Local Municipality, 2015). The proposed waste recovery plant is planned to be located in one of the existing industrial areas, the Highveld Steel complex.

The Highveld Steel complex is approximately 10 kilometres west from the CBD and has an estimated area of 1 700 ha (eMalahleni Local Municipality, 2015). The two nearest towns to the Highveld Steel complex are the Kwa-Guqa township, which is located approximately 5.9 kms from the complex, and the small town of Clewer, which is located approximately 7.0 kms away from the complex. The Highveld industrial area is wholly occupied by Highveld Steel. The plant will therefore be situated in an area which is already cordoned off for manufacturing purposes. Subsequently, it is expected that the proposed plant will have very little additional effect on the surrounding areas.



Map 4.1: Project locality and surrounding land uses (eMalahleni Local Municipality, 2015)

5. IMPACT ANALYSIS

This chapter presents the analysis of the socio-economic impacts that are expected to ensue as a result of the development of the proposed project and an evaluation of these impacts according to the predefined criteria. The potential economic impacts identified arise as a consequence of the construction and operation of the proposed waste recovery plant at Highveld Steel.

It should be noted that the modelling of the economic impacts of the investment into manufacturing activity during the construction and operational phases were based on the data obtained from Savannah Environmental. Any changes to these assumptions will affect the predicted effects and may impact on the significance of the impact.

5.1 Construction phase impacts

Positive impact on production

Economic production can be described as any activity that employs inputs such as labour and capital to manufacture outputs in the form of either goods or services. The construction of the proposed waste recovery plant will include activities such as engineering and design, infrastructure and location development, construction of facilities, installation of equipment and machinery, and other commercial activities affiliated with the construction of the plant.

The economic impact resulting from the initial investment will be experienced throughout the economy with windfall effects contributing to related sectors of the economy. The effect is defined according to the direct, indirect, and induced impacts, culminating into the "multiplier effect". The various impacts or spill-over effects advance throughout the economy, contributing to augmented production levels. The initial investment spend will bring about a production effect where manufactures and suppliers of goods and services would encounter a need to increase current production levels by increasing labour absorption and operational capacity. Downstream effects will produce a consumption-induced effect on the wider economy – as employment remuneration increases and consumer expenditure rises – thereby raising the sales of goods and services in the surrounding economy.

The initial construction-affiliated activities required for the proposed waste recovery facility will occur over one year, as the construction of the facility is not expected to exceed 12 months. The investment in the development of the waste recovery facility is valued at R62,14 million in 2017 current prices. This is forecast to amount to a total impact on provincial production of R185,31 million (2017 prices). This denotes that every R1 invested during the construction phase of the facility will generate R2.98 of new commercial sales throughout the economy. As is evident from **Table 5-1** below, the building and construction sector is expected to benefit the most due to the direct effect to be experienced in the sector.

Just over 51% of the production output to be generated by the project will be as a result of indirect effects. The production-induced affect resulting from the investment

expenditure is forecast to generate heightened production levels throughout the economy, with large effects expected within the manufacturing, real estate and business services, trade and accommodation, and mining sectors.

Table 5-1: Impact on production during construction (R million, 2017 prices)

Sector	Direct	Indirect	Induced	Total	
Agriculture	-	R0,88	R1,51	R2,39	1,3%
Mining	-	R9,93	R2,28	R12,21	6,6%
Manufacturing	-	R23,66	R10,14	R33,80	18,2%
Electricity	-	R1,43	R0,78	R2,21	1,2%
Water[3]	-	R8,97	R0,42	R9,39	5,1%
Building and Construction	R62,14	R16,77	R0,40	R79,31	42,8%
Trade and accommodation	-	R9,93	R2,81	R12,73	6,9%
Transport and storage	-	R6,41	R3,48	R9,90	5,3%
Financing	-	R0,57	R1,99	R2,56	1,4%
Real estate and business services	-	R14,70	R2,33	R17,03	9,2%
Government services	-	R1,40	R1,11	R2,51	1,4%
Other	-	R0,51	R0,76	R1,27	0,7%
Total	**R62,14**	**R95,15**	**R28,02**	**R185,31**	**100,0%**

Urban-Econ calculations based on data supplied by the client

Temporary increase in production during construction			
Impact description: The impact takes place due to the investment on the project that will be spent in the province. Besides the direct impact, it involves the indirect and induced effects that are created when either suppliers of goods and services to the project experience an increase in demand, or when businesses servicing households experience an increase in demand for their products.			
Dimension	**Rating**	**Motivation**	**Significance**
Prior to Mitigation			
Duration	Short-term (1)	The construction period will last for less than one year.	Low Positive (+28)
Extent	Regional (4)	Production increase will affect the entire Mpumalanga Province.	
Magnitude	Minor (2)	The provincial economy's output will increase by R185,31 million.	
Probability	High (4)	It is highly likely that there will be a temporary increase in production during construction.	
Enhancement Measures			
• The impact is positive; measures to maximise the stimulation of the economy may include procurement of goods and services from local businesses where feasible.			

[3] This sectoral demarcation includes waste management and remediation activities (which includes waste collection, treatment and disposal activities; material recovery).

Post Enhancement Measures: Enhancement measures will not change the rating.			
Duration	Short-term (1)	The construction period will last for less than one year.	Low Positive (+28)
Extent	Regional (4)	Production increase will affect the entire Mpumalanga Province.	
Magnitude	Minor (2)	The provincial economy's output will increase by R185,31 million.	
Probability	High (4)	It is highly likely that there will be a temporary increase in production during construction.	
Residual impact: Short term economic injection into the local and regional economy.			

Positive impact on GDP-R

A country's gross domestic product (GDP) is the total value of all "final" goods and services produced within its borders in a one-year period. The predominant approach of expanding GDP levels is by means of investment in infrastructure and enterprises that generate goods and services. Investment into the production of new and improved goods and services foster elevated levels of value added within the economy.

The establishment of the proposed waste recovery facility is anticipated to cost R62,14 million (2017 prices) and will generate R65,14 million of value added throughout the economy, of which the biggest portion will be generated through production-induced effects (or indirect impacts). Industries that will experience the largest temporary growth in value added will include the building and construction, manufacturing, and real estate and business services sectors.

Table 5-2: Impact on GDP-R during construction (R million, 2017 prices)

Sector	Direct	Indirect	Induced	Total	
Agriculture	-	R0,46	R0,79	R1,25	1,9%
Mining	-	R4,97	R1,14	R6,11	9,4%
Manufacturing	-	R6,21	R2,65	R8,86	13,6%
Electricity	-	R0,81	R0,45	R1,2	1,9%
Water	-	R3,32	R0,15	R3,48	5,3%
Building and Construction	R15,87	R4,36	R0,12	R20,35	31,2%
Trade and accommodation	-	R5,55	R1,52	R7,07	10,9%
Transport and storage	-	R2,92	R1,59	R4,5	6,9%
Financing	-	R0,38	R1,30	R1,68	2,6%
Real estate and business services	-	R7,36	R1,20	R8,56	13,1%
Government services	-	R0,66	R0,52	R1,17	1,8%
Other	-	R0,34	R0,49	R0,83	1,3%
Total	**R15,87**	**R37,34**	**R11,93**	**R65,14**	**100,0%**

Urban-Econ calculations based on data supplied by the client

Temporary increase in provincial GDP-R during construction
Impact description: The impact is generated through capital expenditure that heightens activity in the economy. It results in growth of sectors that include businesses supplying goods and

services necessary for the development of the waste recovery facility and businesses that benefit from the increased consumer expenditure.			
Dimension	**Rating**	**Motivation**	**Significance**
Prior to Mitigation			
Duration	Short-term (1)	The construction period will last for less than one year.	Low Positive (+28)
Extent	Regional (4)	Production increase will affect the entire Mpumalanga Province.	
Magnitude	Minor (2)	The provincial economy's GDP will increase by R65,14 million.	
Probability	High (4)	It is highly likely that there will be a temporary increase in GDP-R during construction.	
Enhancement Measures			
• Recruit local labour. • Sub-contract to local construction companies. • Use local suppliers where viable and arrange with local SMMEs to provide transport, catering and other services for the construction crew.			
Post Enhancement Measures: Enhancement measures will not increase the significance rating but will assist with increasing the benefits experienced by the local economy.			
Duration	Short-term (1)	The construction period will last for less than one year.	Low Positive (+28)
Extent	Regional (4)	Production increase will affect the entire Mpumalanga Province.	
Magnitude	Minor (2)	The provincial economy's GDP will increase by R65,14 million.	
Probability	High (4)	It is highly likely that there will be a temporary increase in GDP-R during construction.	
Residual impact: Short term economic injection into the local and regional economy.			

Positive impact on employment

The unemployment rate in the eMalahleni LM stood at 30.3% in 2019 and the number of employed individuals has been increasing for the past 16 years (Urban-Econ Calculations based on Quantec, 2020c). The establishment of the proposed plant is expected to create 607 jobs over the construction period with the building and construction sector expected to incur the highest increase in labour. In total:

- 300 jobs will be created at the construction site itself and a portion of these will be made available for the local labour force, which could temporarily reduce the unemployment rate.
- Furthermore, 249 jobs will be created through indirect impacts during the construction phase, because of the procurement of goods and services required for the development of the plant.

- A further 58 jobs will be established through consumption-induced impacts, as a result of directly and indirectly benefitting households spending income derived from the project on goods and services.

Table 5-3: Impact on employment during construction (numbers)

Sector	Direct	Indirect	Induced	Total	
Agriculture	-	6	11	17	2.8%
Mining	-	9	2	11	1.8%
Manufacturing	-	12	5	17	2.8%
Electricity	-	1	-	1	0.2%
Water	-	6	-	6	1.0%
Building and Construction	300	81	1	382	62.9%
Trade and accommodation	-	36	10	46	7.6%
Transport and storage	-	3	1	4	0.7%
Financing	-	3	11	14	2.3%
Real estate and business services	-	88	14	102	16.8%
Government services	-	3	2	5	0.8%
Other	-	1	1	2	0.3%
Total	**300**	**249**	**58**	**607**	**100.0%**

Urban-Econ calculations based on data supplied by the client

Temporary increase in employment opportunities during construction			
Impact description: The impact is generated through capital expenditure that shock the economy. It involves the creation of direct new job opportunities related to the construction of the proposed facility and employment opportunities that will be indirectly created through increased expenditure in sectors supplying goods and services for the construction of the waste recovery facility and in sectors benefitting from the increase in consumer expenditure.			
Dimension	**Rating**	**Motivation**	**Significance**
Prior to Mitigation			
Duration	Short-term (1)	The construction period will last for less than one year.	Medium Positive (+36)
Extent	Regional (4)	Production increase will affect the entire Mpumalanga Province.	
Magnitude	Low (4)	Will create 607 employment opportunities.	
Probability	High (4)	It is highly likely that there will be a temporary increase in employment during construction.	
Enhancement Measures			
• Utilise labour intensive construction methods where feasible. • Sub-contract to local construction companies. • Use local suppliers. • Set-up a skills desk at the local municipal office and in the nearby communities to identify skills available in the community and assist in recurring labour during the construction phase.			

Post Enhancement Measures: Enhancement measures could increase the impact on the local economy but would not change the total impact. As a result, the weights assigned for the impact before enhancement will not be affected.			
Duration	Short-term (1)	The construction period will last for less than one year.	Medium Positive (+36)
Extent	Regional (4)	Production increase will affect the entire Mpumalanga Province.	
Magnitude	Low (4)	Will create 607 employment opportunities.	
Probability	High (4)	It is highly likely that there will be a temporary increase in employment during construction.	
Residual impact: No residual impacts are applicable.			

Despite the creation of additional employment opportunities associated with the construction phase of the waste recovery facility, stakeholder engagements revealed that currently there are limited employment opportunities for local community members and as a result there is a high level of competition for employment in the region. As such, the certain stakeholders indicated that the competition for employment could potentially escalate into unrest amongst local community members and the upheaval of societal stresses. Therefore, the needs of the community should be noted and taken into consideration when employing permanent and/or temporary employees at the facility. However, some of the stakeholders acknowledged that the creation of additional employment opportunities in the area are welcome.

Positive impact on skills development

Skills are imperative for satisfying job requirements and adequately performing tasks that ultimately boost the economy. The construction of the plant requires a variation of skill sets ranging from semi-skilled construction workers to highly skilled engineers. Employees who are new to the market will develop and attain new skills, whilst workers adept in particular skills will sharpen their abilities. It is envisaged that 300 jobs will be created at the construction site itself. From this, around 60 jobs are for highly skilled employees such as supervisors, 120 jobs are for skilled employees such as machine operators and 90 jobs are for semi-skilled or unskilled employees.

In addition, a total of 90 jobs will be created within the Mpumalanga Province which includes the local community. From this, 18 jobs are for highly skilled employees, 36 jobs are for skilled employees and 36 jobs are for semi-skilled or unskilled employees. The employment opportunities are for a short-term period of around one year; however, the skills attained will be beneficial for a long-term period as these individuals will be able to increase their marketability for future employment.

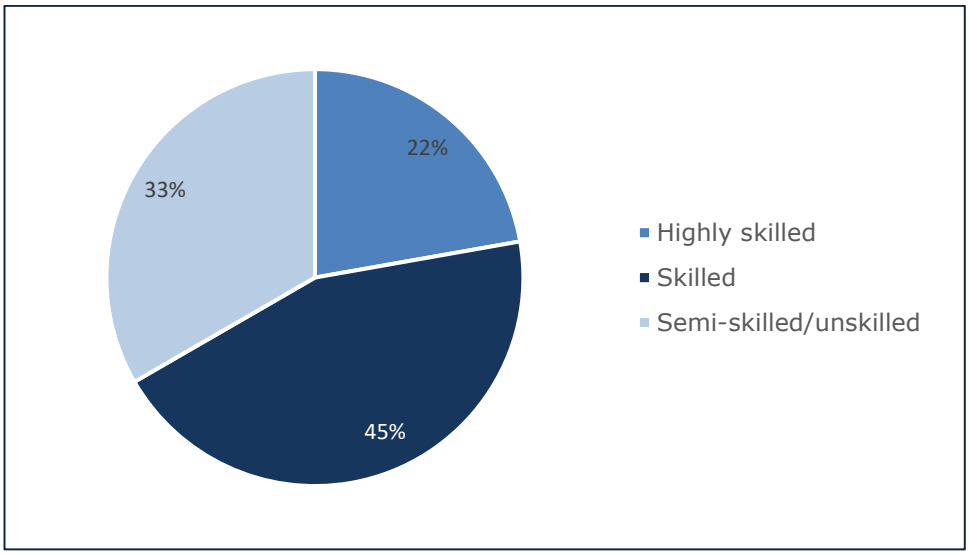


Figure 6: Skills set proportions during construction

Skills development during construction			
Impact description: The impact takes place during the creation of new employment opportunities, and unlike the actual employment created, is sustainable.			
Dimension	**Rating**	**Motivation**	**Significance**
Prior to Mitigation			
Duration	Short-term (1)	The construction period will last for less than one year.	Low Positive (+18)
Extent	Local Municipality (3)	Skills will be transferred to workers sourced from the municipality.	
Magnitude	Minor (2)	Minor impact on local employees' skills.	
Probability	Distinct possibility (3)	It is likely that there will be a transfer of skills during construction.	
Enhancement Measures			
• Ensure that the main contractor shares knowledge with the sub-contracting companies during the construction period. • Encourage the main contractor to offer internships and learnerships, especially to those coming from the local communities.			
Post Enhancement Measures			
Duration	Short-term (1)	The construction period will last for less than one year.	Low Positive (+24)
Extent	Local Municipality (3)	Skills will be transferred to workers sourced from the municipality.	
Magnitude	Minor (2)	Minor impact on local employees' skills.	

Probability	High (4)	There will be a transfer of skills during construction.	
Residual impact: Skills developed during the project can be utilised in future.			

Positive impact on household income and improved living standard

Nearly half of the population of the eMalahleni LM are classified as low-income earners. The employment creation during the construction period will temporarily increase affected households' income to the value of R34,61 million in 2017 prices.

Employed individuals will increase the income of their respective households and therefore improve their standard of living for a period of one year. In addition, increased household income facilitates increased expenditure on goods and services in the economy. In the context of the proposed waste recovery plant, workers employed in the construction phase as well as their households can expect an improvement in their quality of life and standard of living.

Table 5-4: Impact on household income during construction (R million, 2017 prices)

Sector	Direct	Indirect	Induced	Total	
Agriculture	-	R0,16	R0,23	R0,39	1,1%
Mining	-	R2,28	R0,52	R2,80	8,1%
Manufacturing	-	R2,43	R0,99	R3,42	9,9%
Electricity	-	R0,39	R0,22	R0,61	1,8%
Water	-	R1,32	R0,06	R1,38	4,0%
Building and Construction	R27,00	R2,79	R0,07	R13,10	37,9%
Trade and accommodation	-	R3,17	R0,86	R4,03	11,6%
Transport and storage	-	R1,35	R0,74	R2,09	6,0%
Financing	-	R0,19	R0,67	R0,86	2,5%
Real estate and business services	-	R3,91	R0,57	R4,48	12,9%
Government services	-	R0,41	R0,32	R0,73	2,1%
Other	-	R0,29	R0,43	R0,72	2,1%
Total	**R27,00**	**R18,69**	**R5,68**	**R34,61**	**100,0%**

Urban-Econ calculations based on data supplied by the client

Households supplying inputs to the plant's construction are expected to benefit indirectly to the tune of R18,69 million. As seen in **Table 5-4** above, household income as relating to all sectors in the province will realise levels rise; however, households associated with the building and construction, real estate and business services, and trade and accommodation sectors are anticipated to experience the greatest gains. Lastly, due to an increase in household consumption-induced through the creation of direct and indirect employment opportunities, an additional R5,68 million will be earned by households in the

Temporary increase in household income during construction
Impact description: Household income will increase due to jobs created through direct, indirect, and induced effects.

<table>
<tr><th>Dimension</th><th>Rating</th><th>Motivation</th><th>Significance</th></tr>
<tr><td colspan="4">Prior to Mitigation</td></tr>
<tr><td>Duration</td><td>Short-term (1)</td><td>The construction period will last for less than one year.</td><td rowspan="4">Low Positive (+28)</td></tr>
<tr><td>Extent</td><td>Regional (4)</td><td>Increase in income will affect households of local workers as well as workers benefitting through multiplier effects throughout the Province.</td></tr>
<tr><td>Magnitude</td><td>Minor (2)</td><td>Household earnings will be derived by individuals involved in the plant establishment.</td></tr>
<tr><td>Probability</td><td>High (4)</td><td>It is highly likely that household income will temporarily increase.</td></tr>
<tr><td colspan="4">Enhancement Measures</td></tr>
<tr><td colspan="4">• Employ labour intensive methods in construction.
• Sub-contract to local companies.
• Use local suppliers where feasible and arrange with local SMMEs to provide transport, catering, and other services for the construction crew.</td></tr>
<tr><td colspan="4">Post Enhancement Measures: Enhancement measure could increase the impact on the local economy but would not change the total impact. As a result, the weights assigned for the impact before enhancement will not be affected.</td></tr>
<tr><td>Duration</td><td>Short-term (1)</td><td>The construction period will last for less than one year.</td><td rowspan="4">Low Positive (+28)</td></tr>
<tr><td>Extent</td><td>Regional (4)</td><td>Increase in income will affect households of local workers as well as workers benefitting through multiplier effects throughout the Province.</td></tr>
<tr><td>Magnitude</td><td>Minor (2)</td><td>Household earnings will be derived by individuals involved in the plant establishment.</td></tr>
<tr><td>Probability</td><td>High (4)</td><td>It is highly likely that household income will temporarily increase.</td></tr>
<tr><td colspan="4">Residual impacts: No residual impacts are applicable.</td></tr>
</table>

<u>Positive impact on government revenue</u>

The construction phase of the proposed waste recovery facility will span for a period of less than one year. However, capital equipment will be purchased during the construction phase. Regardless of the duration of the construction phase, companies will be generating revenue and employ individuals due to the construction-related capital expenditure. From this, companies are obligated to pay government income taxes and payroll taxes. In addition, increased spending power will result in more purchases, which would increase the Value Added Tax (VAT) base for government. The various taxes received by

government improves the government's ability to deliver services and will contribute to an increase in the national fiscus.

Temporary increase in government revenue during construction			
Impact description: The impact will occur due to local expenditure on construction and will be acquired by government through direct and indirect taxes.			
Dimension	**Rating**	**Motivation**	**Significance**
Prior to Mitigation			
Duration	Short-term (1)	The construction period will last for less than one year.	Medium Positive (+32)
Extent	National (5)	Government revenue may filter through the three spheres of government.	
Magnitude	Minor (2)	Increase in government revenue will remain in the domain of government.	
Probability	High (4)	It is highly likely that tax will be paid.	
Enhancement Measures			
No enhancement.			
Post Enhancement Measures			
Duration	Short-term (1)	The construction period will last for less than one year.	Medium Positive (+32)
Extent	National (5)	Government revenue may filter through the three spheres of government.	
Magnitude	Low (2)	Increase in government revenue will remain in the domain of government.	
Probability	High (4)	It is highly likely that tax will be paid.	
Residual impacts: No residual impacts are applicable.			

<u>Negative impact on basic services and social and economic infrastructure</u>

During the construction phase, a heightened pressure on local service delivery and economic infrastructure should occur. However, as the development of the wate recovery facility is limited to within an already existing industrial complex, the added pressure on service delivery and economic infrastructure should not be as pronounced.

Temporary increase in pressure on services and social and local infrastructure during construction
Impact description: The impact will occur due to added pressure on basic service delivery and economic infrastructure in the local municipality

Dimension	Rating	Motivation	Significance
Prior to Mitigation			
Duration	Short-term (1)	The construction period will last for less than one year.	Low Negative (-12)
Extent	Local Municipality (3)	Pressure will only be added on service delivery and local municipal economic infrastructure.	
Magnitude	Minor (2)	Increase in local service delivery and economic infrastructure should not extensive.	
Probability	Improbable (-2)	The possibility of the impact on local service delivery is improbable.	
Enhancement Measures			
No enhancement.			
Post Enhancement Measures			
Duration	Short-term (1)	The construction period will last for less than one year.	Low Negative (-12)
Extent	Local Municipality (3)	Pressure will only be added on service delivery and local municipal economic infrastructure.	
Magnitude	Minor (2)	Increase in local service delivery and economic infrastructure should not extensive.	
Probability	Improbable (-2)	The possibility of the impact on local service delivery is improbable	
Residual impacts: No residual impacts are applicable.			

Impact on the demand for housing

Construction labourers are expected to be sourced from surrounding communities within the LM. However, the external sourcing of construction labour into the local community as the local community may not be able to provide some of the skills necessary for the construction of the facility, may contribute to a minor increase in the demand for housing to accommodate labourers.

Temporary increase in demand for housing during construction			
Impact description: The impact will occur due to added pressure on the availability of housing located in the local community. This may contribute to increased levels of competition in the temporary housing market.			
Dimension	**Rating**	**Motivation**	**Significance**
Prior to Mitigation			
Duration	Short-term (1)	The construction period will last for less than one year	Low Negative (-24)
Extent	Local Municipality (3)	Pressure will only be added on the local municipality to provide	

		housing for outsourced construction workers	
Magnitude	Low (4)	The increase in demand for affordable accommodation should not be extensive as workers will primarily be sourced from the local communities.	
Probability	Distinct possibility (-3)	The possibility of the impact on the provision of affordable accommodation is very low	
Enhancement Measures			
• Provide onsite accommodation for outsourced construction workers.			
Post Enhancement Measures			
Duration	Short-term (1)	Pressure will only be added on the local municipality to provide housing for outsourced construction workers.	Low Positive (+12)
Extent	Local Municipality (3)	The increase in demand for affordable accommodation should be mitigated if external construction crews are provided with onsite accommodation.	
Magnitude	Minor (2)	The possibility of the impact on the provision of affordable accommodation is very low.	
Probability	Low (2)	A reduced amount of pressure will be added on the local municipality to provide housing for outsourced construction workers.	
Residual impacts: No residual impacts are applicable.			

Total impact during construction

Due to the linkages between the activities associated with the waste recovery facility and other supporting industries, the total impact on the provincial economy during the construction phase will be as follows:

Table 5-5: Summary of impacts during the construction phase

Indicator	Direct	Indirect	Induced	Total
Production (R million, 2017 prices)	R62,14	R95,15	R28,02	R185,31
GDP-R (R million, 2017 prices)	R15,87	R37,34	R11,93	R65,14
Employment (number)	300	249	58	607
Household income (R million, 2017 prices)	R27,00	R18,69	R5,68	R34,61

Furthermore, **Table 5-6** below summarises the respective impacts via backward linkages and the multiplier effect for each of the evaluated indicators:

Table 5-6: Summary of multiplier effects during the construction phase

Indicator	Direct	Indirect	Induced	Total
Production	1.00	1.53	0.45	2.98
GDP-R	0.26	0.60	0.19	1.05
Employment	4.83	4.09	1.04	9.96
Household income	0.43	0.30	0.09	0.56

5.2 Operation phase impacts

Positive impact on production

Once operational, it is estimated that the proposed plant will stimulate production to the value of around R56,22 million. Due to the backward linkages and the multiplier effect associated with the consumption induced impacts, for every R1 of revenue generated by the plant directly, it will create an additional R1,64 in the rest of the provincial economy. Therefore, the total annual impact on the production in the country will amount to R92,16 million per annum.

- The waste recovery facility will have to acquire inputs from a variety of sectors such as manufacturing, electricity, and mining sectors. These additional new business sales averaging R17,17 million (2017 prices) per year, will be created as a result of the indirect multiplier effect stimulated by operating activities of the plant. According to **Table 5-7** below, manufacturing followed by electricity will experience the largest increase in production due to stimulus.
- The upsurge in household expenditure in the province, induced by the plant's activities, will further generate R18,78 million (2017 prices) per annum. This expenditure pattern of households in the Mpumalanga Province will cause the manufacturing, transport and storage, and mining sectors to experience the largest increase in demand for their products and services.

As the waste recovery facility will be located in the eMalahleni LM and assuming that the entire production value will be accounted as part of the output of the LM, the size of the eMalahleni LM's economy is expected to increase. During engagements with the IA&Ps, some concerns were raised in terms of heightened competition between existing slag processing operations in the region and the proposed waste recovery facility. However, the existence of operational synergies between the concerned parties could provide for a more accommodating business environment.

Table 5-7: Impact on production during operations (R million, 2017 prices)

Sector	Direct	Indirect	Induced	Total	
Agriculture	-	R1,10	R1,03	R2,13	2,3%
Mining	-	R2,70	R1,53	R4,23	4,6%

Sector	Direct	Indirect	Induced	Total	
Manufacturing	-	R5,62	R6,86	R12,48	13,5%
Electricity	-	R5,35	R0,52	R5,87	6,4%
Water	R56,22	R0,09	R0,27	R56,58	61,4%
Building and Construction	-	R0,05	R0,26	R0,31	0,3%
Trade and accommodation	-	R0,64	R1,86	R2,49	2,7%
Transport and storage	-	R0,94	R2,35	R3,28	3,6%
Financing	-	R0,03	R1,28	R1,31	1,4%
Real estate and business services	-	R0,28	R1,55	R1,83	2,0%
Government services	-	R0,25	R0,75	R1,00	1,1%
Other	-	R0,13	R0,51	R0,64	0,7%
Total	**R56,22**	**R17,17**	**R18,78**	**R92,16**	**100,0%**

Urban-Econ calculations based on data supplied by the client

Temporary increase in production during operations			
Impact description: The impact occurs due to the sustainable production of the waste recovery facility, as well as procurement of goods and services for its operations and creation of employment opportunities through direct and indirect effects.			
Dimension	**Rating**	**Motivation**	**Significance**
Prior to Mitigation			
Duration	Long-term (4)	It is envisaged that the plant will be operational for approximately 25 years.	Medium Positive (+48)
Extent	Regional (4)	Production increase will affect the entire Province due to direct and spill over effects.	
Magnitude	Low (4)	The provincial economy's production will increase by R92,16 million.	
Probability	High (4)	It is highly likely that there will be a sustainable increase in production during operations.	
Enhancement Measures			
• Procurement of goods and services from local businesses where feasible, will increase benefits to the local economy but will not change the rating.			
Post Enhancement Measures: Enhancement measures will not change the rating			
Duration	Long-term (4)	It is envisaged that the plant will be operational for approximately 25 years.	Medium Positive (+48)
Extent	Regional (4)	Production increase will affect the entire Province due to direct and spill over effects.	
Magnitude	Low (4)	The provincial economy's production will increase by R92,16 million.	

Probability	High (4)	It is highly likely that there will be a sustainable increase in production during operations.	
Residual impacts: No residual impacts are applicable.			

Positive impact on GDP-R

The operating expenditure incurred by the waste recovery facility will translate into R63 million (2017 prices) of GDP-R through direct and spin-off effects. Direct expenditure plays a crucial role in the growth of GDP, with the water sector increasing by an estimated R47,42 million in the province. Furthermore, the production-induced impact is forecast to raise annual GDP-R by an average of R7,6 million per annum; while the consumption-induced effect will see to a further expansion of GDP-R by R7,97 million per annum.

Table 5-8: Impact on GDP-R during operations (R million, 2017 prices)

Sector	Direct	Indirect	Induced	Total	
Agriculture	-	R0,55	R0,54	R1,08	1,7%
Mining	-	R1,37	R0,77	R2,14	3,4%
Manufacturing	-	R1,41	R1,79	R3,21	5,1%
Electricity	-	R3,06	R0,30	R3,35	5,3%
Water	R47,42	R0,03	R0,10	R47,55	75,5%
Building and Construction	-	R0,02	R0,08	R0,09	0,2%
Trade and accommodation	-	R0,35	R1,00	R1,36	2,2%
Transport and storage	-	R0,43	R1,07	R1,51	2,4%
Financing	-	R0,02	R0,84	R0,86	1,4%
Real estate and business services	-	R0,16	R0,80	R0,95	1,5%
Government services	-	R0,12	R0,35	R0,46	0,7%
Other	-	R0,09	R0,33	R0,42	0,7%
Total	**R47,42**	**R7,60**	**R7,97**	**R63,00**	**100,0%**

Urban-Econ calculations based on data supplied by the client

It is evident that the water sector is the dominant beneficiary of the project's operations and will comprise of 75.5% of all value added stimulated by the project through its direct and multiplier effects. In summation, the greater the value of goods and services procured by the plant during its operations from the local economy, the greater the overall economic benefit for the LM.

Temporary increase in provincial GDP-R during operations			
Impact description: The impact is created through the continuous operation of the waste recovery facility. This stimulates economic activities of directly and indirectly affected business. As a result, production is increased, and value added is created. An additional value added is further created through household expenditure.			
Dimension	**Rating**	**Motivation**	**Significance**
Prior to Mitigation			
Duration	Long-term (4)	It is envisaged that the plant will be operational for approximately 25 years.	Medium Positive (+48)

Extent	Regional (4)	GDP-R increase will affect the entire Province.	
Magnitude	Low (4)	The provincial economy's GDP will increase by R63 million.	
Probability	High (4)	It is highly likely that there will be a sustainable increase in GDP-R during operations.	
Enhancement Measures			
• Explore local procurement alternatives.			
Post Enhancement Measures: Augmentation will not increase the significance rating but will assist with increasing the benefits felt by the local economy.			
Duration	Long-term (4)	It is envisaged that the plant will be operational for approximately 25 years.	Medium Positive (+48)
Extent	Regional (4)	GDP-R increase will affect the entire Province.	
Magnitude	Low (4)	The provincial economy's GDP will increase by R63 million.	
Probability	High (4)	It is highly likely that there will be a sustainable increase in GDP-R during operations.	
Residual impacts: No residual impacts are applicable.			

Positive impact on employment

The proposed waste recovery plant will create around 59 employment opportunities. Of the total direct employment opportunities created, 90.0% will be sourced from local communities whilst the remaining 10.0% will be sourced from external locations. The current labour participation rate is 68.4% in the eMalahleni LM. The operations of the plant will therefore increase the number of employed working age individuals, thus slightly reducing local unemployment.

In addition to the direct jobs created on site, the waste recovery plant will also stimulate the creation of 57 sustainable employment opportunities through production and consumption induced impacts. Overall, a total contribution of the project towards sustainable employment creation in South Africa will be 116 jobs that will be supported. Jobs created during operations through multiplier effects will be distributed among all economic sectors. The largest number of jobs will be created in the water, agriculture, and real estate and business services sectors.

Despite the creation of additional employment opportunities associated with the operational phase of the waste recovery facility, stakeholder engagements revealed that currently there are limited employment opportunities for local community members and as a result there is a high level of competition for employment in the region. As such, the certain stakeholders indicated that the competition for employment could potentially escalate into unrest amongst local community members and the upheaval of societal

stresses. Therefore, the needs of the community should be noted and taken into consideration when employing permanent and/or temporary employees at the facility. However, some of the stakeholders acknowledged that the creation of additional employment opportunities in the area are welcome.

Table 5-9: Impact on employment during operations (numbers)

Sector	Direct	Indirect	Induced	Total	
Agriculture	-	8	8	16	13.8%
Mining	-	2	1	3	2.6%
Manufacturing	-	2	3	5	4.3%
Electricity	-	4	-	4	3.4%
Water	59	-	-	59	50.9%
Building and Construction	-	-	1	1	0.9%
Trade and accommodation	-	2	6	8	6.9%
Transport and storage	-	-	1	1	0.9%
Financing	-	-	7	7	6.0%
Real estate and business services	-	1	9	10	8.6%
Government services	-	-	1	1	0.9%
Other	-	-	1	1	0.9%
Total	**59**	**19**	**38**	**116**	**100.0%**

Urban-Econ calculations based on data supplied by the client

Creation of employment opportunities during operations			
Impact description: The impact takes place throughout the operational phase and is translated into the creation of new employment opportunities at the waste recovery facility and businesses that are affected through indirect and induced effects.			
Dimension	**Rating**	**Motivation**	**Significance**
Prior to Mitigation			
Duration	Long-term (4)	It is envisaged that the plant will be operational for approximately 25 years.	Medium Positive (+40)
Extent	Regional (4)	The increase in employment will affect the entire Province.	
Magnitude	Minor (2)	The project will provide 116 sustainable employment opportunities.	
Probability	High (4)	It is highly likely that there will be a sustained increase in employment during operations.	
Enhancement Measures			
• Employ local labour to increase the benefits of the local community.			
Post Enhancement Measures: Improvement could increase the impact on the local economy but would not change the total impact. Therefore, the weights assigned for the impact before improvements will not be affected.			

Duration	Long-term (4)	It is envisaged that the plant will be operational for approximately 25 years.	Medium Positive (+40)
Extent	Regional (4)	The increase in employment will affect the entire Province.	
Magnitude	Minor (2)	The project will provide 116 sustainable employment opportunities.	
Probability	High (4)	It is highly likely that there will be a sustained increase in employment during operations.	
Residual impacts: No residual impacts are applicable.			

Positive impact on skills development

The speciality of the waste recovery plant requires and creates scarce skills that will be essential in the long run if other waste recovery plants are to be developed. In all, 59 jobs are expected to be created for the operations of the plant. From this, 12 jobs are to be allocated to highly skilled workers, 33 jobs are allocated to skilled workers and the remaining 14 are dedicated to semi-skilled or unskilled employees.

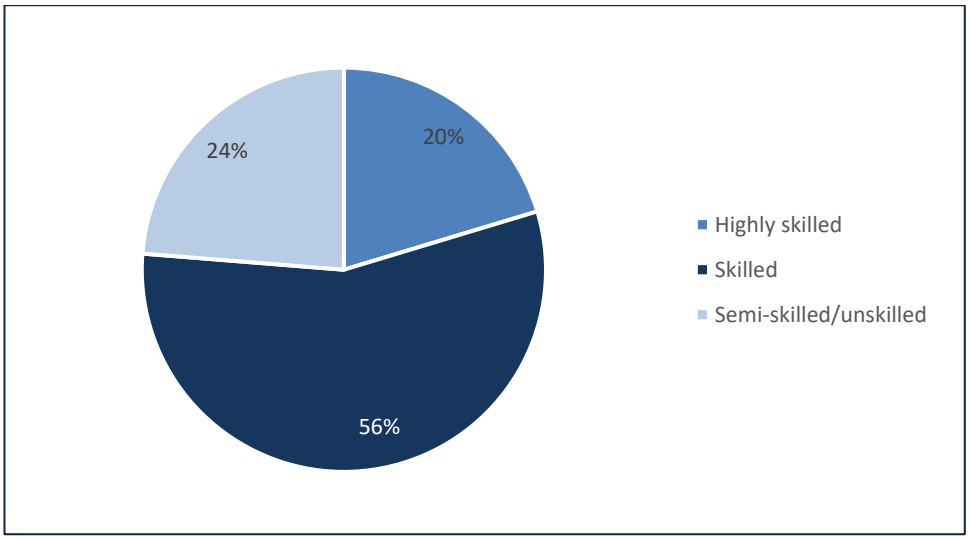


Figure 7: Skill set proportions during operations

The employment opportunities are for a long-term period of 25 years and the sustainability thereof will have a positive impact on skills to the benefit of employees. In addition, as production and consumption effects filter through the economy creating increased demand for more labour, human resources will be trained and skilled within aligned industries. As a result, the plant's operations will result in enhanced skills through training and experience in the wider national economy.

<table>
<tr><th colspan="4">Skills development during operations</th></tr>
<tr><td colspan="4">Impact description: The impact results from the investment in skills development of the local communities and the waste recovery facility's employees during its operations.</td></tr>
<tr><th>Dimension</th><th>Rating</th><th>Motivation</th><th>Significance</th></tr>
<tr><td colspan="4">Prior to Mitigation</td></tr>
<tr><td>Duration</td><td>Long-term (4)</td><td>It is envisaged that the plant will be operational for approximately 25 years.</td><td rowspan="4">Low Positive (+27)</td></tr>
<tr><td>Extent</td><td>Local Municipality (3)</td><td>Skills will be transferred to the facility's workers and other beneficiaries from the local communities.</td></tr>
<tr><td>Magnitude</td><td>Minor (2)</td><td>There will be a minor improvement in local labour skills.</td></tr>
<tr><td>Probability</td><td>Probable (3)</td><td>It is probable that there will be skills transferred during operations.</td></tr>
<tr><td colspan="4">Enhancement Measures</td></tr>
<tr><td colspan="4">• Ensure that the plant owner provides for knowledge-sharing opportunities during the operations of the project.
• Encourage the project owner to offer internships and learnerships, especially to those coming from the local communities.</td></tr>
<tr><td colspan="4">Post Enhancement Measures</td></tr>
<tr><td>Duration</td><td>Long-term (4)</td><td>It is envisaged that the plant will be operational for approximately 25 years.</td><td rowspan="4">Medium Positive (+36)</td></tr>
<tr><td>Extent</td><td>Local Municipality (3)</td><td>Skills will be transferred to the facility's workers and other beneficiaries from the local communities.</td></tr>
<tr><td>Magnitude</td><td>Minor (2)</td><td>There will be a minor improvement in local labour skills.</td></tr>
<tr><td>Probability</td><td>High (4)</td><td>It is highly likely that there will be skills transferred during operations</td></tr>
<tr><td colspan="4">Residual impacts: Skills obtained during employment could be used in future.</td></tr>
</table>

The contribution of the waste recovery facility to the skills enhancement of the local community requires careful consideration. According to primary data collected during I&APs consultations, corporate social investment (CSI) programmes will be based on the recommendations of existing operations in the Highveld Steel complex to ensure a focussed outcome that would maximise the benefits experienced by the surrounding community members. It is important that the CSI programme/s are implemented to ensure the benefits associated with the waste recovery facility are maximised.

Positive impact on household income and standard of living

For a period of 25 years, 59 individuals will be employed at the waste recovery plant. As a result, the benefiting individuals and their respective households will experience an improvement in their standard of living due to the income earned. The income earned will contribute to increased purchasing power in the local community, given that a significant proportion of the employed individuals will be based in the local municipality. As a result, the local business will experience improved business activity and the local economy will experience a boost.

The employment creation during the operations period will increase affected households' income to the value of R22,19 million in 2017 prices. Furthermore, businesses supplying inputs to the plant's operations are expected to benefit indirectly to the tune of R3,19 million. Household income as relating to all sectors across the province will realise increases; however, households associated with the water, electricity, and manufacturing sectors are anticipated to experience the greatest gains. Lastly, due to an increase in household consumption induced through the creation of direct and indirect employment opportunities, an additional R3,79 million will be earned by households.

Table 5-10: Impact on household income during operations (R million, 2017 prices)

Sector	Direct	Indirect	Induced	Total	
Agriculture	-	R0,14	R0,16	R0,29	1,3%
Mining	-	R0,61	R0,35	R0,96	4,3%
Manufacturing	-	R0,32	R0,67	R0,99	4,5%
Electricity	-	R1,47	R0,14	R1,62	7,3%
Water	R35,62	R0,01	R0,04	R15,27	68,8%
Building and Construction	-	R0,01	R0,05	R0,06	0,3%
Trade and accommodation	-	R0,20	R0,57	R0,77	3,5%
Transport and storage	-	R0,21	R0,50	R0,71	3,2%
Financing	-	R0,01	R0,43	R0,44	2,0%
Real estate and business services	-	R0,06	R0,38	R0,43	1,9%
Government services	-	R0,07	R0,21	R0,28	1,3%
Other	-	R0,08	R0,29	R0,36	1,6%
Total	**R35,62**	**R3,19**	**R3,79**	**R22,19**	**100,0%**

Urban-Econ calculations based on data supplied by the client

Increase in household income during operations			
Impact description: Household income will be earned due to jobs created through direct, indirect and induced effects; this will allow some of the beneficiaries to improve their living standards.			
Dimension	**Rating**	**Motivation**	**Significance**
Prior to Mitigation			
Duration	Long-term (4)	It is envisaged that the plant will be operational for approximately 25 years.	Medium Positive (+36)

Extent	Local Municipality (3)	Increase in income will affect households of local workers as well as workers benefitting through the multiplier effects.	
Magnitude	Minor (2)	Household earnings will be derived by employees during this phase.	
Probability	High (4)	It is highly likely that household income will increase.	
Enhancement Measures			
• Investigate opportunities to increase local procurement and localise the facility's expenditure. • Explore opportunities to employ as many people form the local communities as possible.			
Post Enhancement Measures: Improvement could increase the impact on the local economy but would not change the total impact. Therefore, the weights assigned for the impact before improvements will not be affected.			
Duration	Long-term (4)	It is envisaged that the plant will be operational for approximately 25 years.	Medium Positive (+36)
Extent	Local Municipality (3)	Increase in income will affect households of local workers as well as workers benefitting through the multiplier effects.	
Magnitude	Minor (2)	Household earnings will be derived by employees during this phase.	
Probability	High (4)	It is highly likely that household income will increase.	
Residual impacts: No residual impacts are applicable.			

Positive impact on government revenue

A significant proportion of government revenue will be derived from payments of income taxes due to an increased number of employed individuals, and increased VAT collection due to increased household expenditure. The main source of the increase in government revenue will mainly be personal income taxes. An increase in government revenue allows the public sector to maintain the existing infrastructure and improve on its service delivery.

Increase in government revenue during operations			
Impact description: The impact takes place mostly with payment of income taxes and corporate taxes, as well because of the payment of salaries and wages and declaration of dividends.			
Dimension	**Rating**	**Motivation**	**Significance**
Prior to Mitigation			
Duration	Long-term (4)	It is envisaged that the plant will be operational for approximately 25 years.	Medium Positive (+44)
Extent	National (5)	Government revenue increase will be experienced nationally.	

Magnitude	Minor (2)	Increase in revenue is not widespread but is felt by government.	
Probability	High (4)	It is highly probable that tax will be paid.	
Enhancement Measures			
• No mitigation.			
Post Enhancement Measures			
Duration	Long-term (4)	It is envisaged that the plant will be operational for approximately 25 years.	Medium Positive (+44)
Extent	National (5)	Government revenue increase will be experienced nationally.	
Magnitude	Minor (2)	Increase in revenue is not widespread but is felt by government.	
Probability	High (4)	It is highly probable that tax will be paid.	
Residual impacts: No residual impacts are applicable.			

Negative impact on basic services and social and economic infrastructure

During the operational phase, a heightened pressure on local service delivery and economic infrastructure should occur. However, as the development of the wate recovery facility is limited to within an already existing industrial complex, the added pressure on service delivery and economic infrastructure should not be as pronounced.

Temporary increase in pressure on services and social and local infrastructure during operations			
Impact description: The impact will occur due to added pressure on basic service delivery and economic infrastructure in the local municipality			
Dimension	**Rating**	**Motivation**	**Significance**
Prior to Mitigation			
Duration	Short-term (1)	The construction period will last for less than one year.	Low Negative (-12)
Extent	Local Municipality (3)	Pressure will only be added on service delivery and local municipal economic infrastructure.	
Magnitude	Minor (2)	Increase in local service delivery and economic infrastructure should not extensive.	
Probability	Low (-2)	The possibility of the impact on local service delivery is very low.	
Enhancement Measures			
No enhancement.			
Post Enhancement Measures			

Duration	Short-term (1)	The construction period will last for less than one year.	Low Negative (-12)
Extent	Local Municipality (3)	Pressure will only be added on service delivery and local municipal economic infrastructure.	
Magnitude	Minor (2)	Increase in local service delivery and economic infrastructure should not extensive.	
Probability	Low (-2)	The possibility of the impact on local service delivery is very low.	
Residual impacts: No residual impacts are applicable.			

Potential health risks due to cumulative air emissions of existing industry and proposed facility

In addition to the positive cumulative impacts in terms of GDP-R and employment contributions noted above, some negative impacts are expected to accumulate in the region such as increased air emissions. The following table summarises and rates the expected cumulative effects in terms of existing air emissions in the region and the contribution of the proposed facility to overall emissions:

Increase in air emissions during operations			
Impact description: Potential health risks due to cumulative air emissions of existing industry and the planned project.			
Dimension	**Rating**	**Motivation**	**Significance**
Cumulative contribution of proposed project			
Duration	Long term (4)	Long term lifespan of proposed project. However, the implementation of mitigation measures may reduce the emission timeframe.	Medium Negative (-44)
Extent	Local Municipality (3)	Cumulative contribution to emissions within the region.	
Magnitude	Low (4)	There will be a minor contribution to local air emissions.	
Probability	High (-4)	There is a high probability of air emissions occurring from the facility.	
Mitigation: Adhere to air specialist's recommendations.			
Residual impacts: No residual impacts are applicable.			

The majority of I&APs indicated that emissions associated with operations at the waste recovery facility is an overwhelming concern. The environmental impact of emissions on surrounding business activities and communities requires consideration by the project owners and will need to be addressed. Furthermore, concerns also centred around the usage of chemicals during the operations of the waste recovery facility. As such, the

necessary mitigation measures will need to be enforced in order to mitigate the potential environmental impacts of the facility.

Total impact during operational phase

Considering the direct impact on commercial production of the proposed waste recovery facility and due to the existing linkages with other supporting industries, the total impact on the provincial economy will be as follows:

Table 5-11: Summary of impacts during operations

Indicator	Direct	Indirect	Induced	Total
Production (R million, 2017 prices)	R56,22	R17,17	R18,78	R92,16
GDP-R (R million, 2017 prices)	R47,42	R7,60	R7,97	R63,00
Employment (number)	59	19	38	116
Household income (R million, 2017 prices)	R35,62	R3,19	R3,79	R22,19

Furthermore, **Table 5-12** below summarises the respective impacts via backward linkages and the multiplier effect for each of the evaluated indicators:

Table 5-12: Summary of multiplier effects during operations

Indicator	Direct	Indirect	Induced	Total
Production	1.00	0.31	0.33	1.64
GDP	0.84	0.14	0.14	1.12
Employment	1.05	0.42	0.76	2.23
Household income	0.63	0.06	0.07	0.39

6. CUMULATIVE IMPACT ANALYSIS

6.1 Cumulative impact on GDP-R and employment

The following table summarises and rates the expected cumulative effects in terms of GDP-R contributions and employment creation:

Increase in production and creation of employment opportunities			
Impact description: The impact is created through the continuous operation of the waste recovery facility. This stimulates economic activities of directly and indirectly affected business. As a result, production is increased, and value added is created. An additional value added is further created through household expenditure. In addition, an employment impact takes place throughout the operational phase and is translated into the creation of new employment opportunities at the waste recovery facility and businesses that are affected through indirect and induced effects.			
Dimension	**Rating**	**Motivation**	**Significance**
Cumulative contribution of proposed project			

Duration	Long-term (4)	It is envisaged that the plant will be operational for approximately 25 years.	Medium Positive (+48)
Extent	Regional (4)	Cumulative contribution to GDP will affect the entire Province, whilst the increase in employment will decrease the number of unemployed individuals in the region. This will ultimately contribute to a provincial improvement in employment.	
Magnitude	Low (4)	There will be a minor contribution to local GDP-R and employment creation.	
Probability	High (4)	There is a high probability that there will be a contribution to GDP-R and employment.	
Enhancement measure: The local procurement of labour and services within the Province and Local Municipality will enhance the economic benefits derived during the operational phase.			

7. CONCLUSION

Anglo African Metals (Pty) Ltd. proposes to develop a small industrial waste recovery plant to process slag from Highveld Steel to extract vanadium and titanium oxides, aluminium as aluminium oxide (Al_2O_3), magnesium as magnesium oxide (MgO) and calcium as calcium sulphate/gypsum ($CaSO_4$). The proposed plant will be located in the Highveld Steel complex which is located in the eMalahleni LM in the Mpumalanga Province will therefore be developed in an existing industrial area.

The review of key national, provincial, and local policy documents indicates that the development of the plant is supported at all levels from a socio-economic perspective. The promotion of the manufacturing sector has been identified as a key area of priority across the documents which were assessed. Furthermore, the creation of jobs due to the development of the plant and the contribution of the plant to a zero-waste society is directly in line with the identified policy documents. After considering the reviewed documentation, no fatal flaws or contraventions from a socio-economic policy perspective exist for the implementation of the proposed project.

The eMalahleni LM is considered to be the economic hub of the Mpumalanga Province and contributes substantially to the province's GDP-R. As the CAGR indicates that the manufacturing sector in the eMalahleni LM has experienced a contraction of 0.4% between 2010 and 2019, the development of the proposed facility may contribute to the revitalisation of the sector and contribute to improved living standards among local households and a reduction in the region's unemployment rate. The economic implications of the proposed waste recovery facility can therefore be summarised as follows:

» Firstly, the project is expected to contribute to the provincial economic capacity in terms of production and GDP-R arising from capital expenditure during both the construction and operations phases.

- Secondly, the development of the proposed facility is likely to contribute to the alleviation of the municipality's unemployment rate and the transference and accumulation of skills in the local labour force. Skills transfers during both the construction and operations phases will improve the marketability of local labourers and enhance their employability. Furthermore, an increase in the number of employed individuals will contribute to elevated household expenditure and standards of living.
- Thirdly, increased capital expenditure, labour employment, household spending and improved economic capacity will contribute to government revenue streams via direct and indirect tax collections. An increase in government revenue allows the public sector to maintain the existing infrastructure and improve on its service delivery.
- Lastly, the development of the waste recovery facility will broadly contribute to the derivation of value from existing industrial waste.

The above suggests that the economy can utilise the investment to diversify its economic base and lead to the improvement of standards of living among local households through the increased income levels and access to improved services, which can be achieved by raising the LM's revenue base through taxes and rates paid by new businesses. The proposed project is therefore likely to create a positive impact on the local economic development and the socio-economic environment in the municipality in general. Considering the positive impacts mentioned above, it is recommended that the establishment of the proposed waste recovery facility is continued, provided that adequate mitigation measures are implemented to address the identified externalities or negative effects. The table below summarises the socio-economic impacts. Overall, numerous positive socio-economic impacts will ensue as a result of the facility.

Impact	Status	Significance before mitigations
Construction Phase		
Increase in production	Positive	Low (28)
Increase in GDP-R	Positive	Low (28)
Employment creation	Positive	Medium (36)
Skills development	Positive	Low (18)
Increase in household income	Positive	Low (28)
Increase in government revenue	Positive	Medium (32)
Increase in pressure on service delivery and economic infrastructure	Negative	Low (-12)
Increase in demand for housing	Negative	Low (-24)
Operation Phase		
Increase in production	Positive	Medium (48)
Increase in GDP-R	Positive	Medium (48)
Employment creation	Positive	Medium (40)
Skills development	Positive	Low (27)

Impact	Status	Significance before mitigations
Increase in household income	Positive	Medium (36)
Increase in government revenue	Positive	Medium (44)
Increase in pressure on service delivery and economic infrastructure	Negative	Low (-12)
Health risks and air emissions	Negative	Medium (-44)
Cumulative Impacts		
Production, GDP-R and employment	Positive	Medium (48)

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9. ANNEXURE A

Assessment of impacts

Direct, indirect and cumulative impacts of the issues identified through the scoping study, as well as all other issues identified in the EIA phase must be assessed in term of the following criteria:

- The **nature,** which shall include a description of what causes the effect, what will be affected and how it will be affected.
- The **extent,** wherein it will be indicated whether the impact will be local (limited to the immediate area or site of development) or regional and a value between 1 and 5 will be assigned as appropriate (with 1 being low and 5 being high).
- The **duration,** wherein it will be indicated whether:
  - The lifetime of the impact will be of a very short duration (0-1) – assigned a score of 1;
  - The lifetime of the impact will be of a short duration (2-5 year) – assigned a score of 2;
  - Medium-term (5-15 years) – assigned a score of 3;
  - Long-term (>15 years) – assigned a score of 4; or
  - Permanent – assigned a score of 5;
- The **magnitude,** quantified on a scale of 0-10, where a score is assigned:
  - 0 is small and will have no effect on the environment.
  - 2 is minor and will not result in an impact on processes.
  - 4 is low and will cause a slight impact on processes.
  - 6 is moderate and will result in processes continuing but in a modified way.
  - 8 is high (processes are altered to the extent that they temporarily cease)
  - 10 is very high and results in complete destruction of patters and permanent cessation of processes.
- The **probability** of occurrence, which shall describe the likelihood of the impact occurring. Probability will be estimated on a scale of 1-5, where 1 is very improbable (probably will not happen), 2 is improbable (some possibility, but low likelihood), 3 is probable (distinct possibility), 4 is highly probable (most likely) and 5 is definite (impact will occur regardless of any prevention measures).
- The **significance,** which shall be determined through a synthesis of the characteristics described above and can be assessed as low, medium or high; and
- The **status,** which will be described as either positive, negative or neutral.
- The degree to which the impact can be reversed.
- The degree to which the impact may cause irreplaceable loss of resources.
- The degree to which the impact can be *mitigated*.

The **significance** is calculated by combining the criteria in the following formula:

S = (E + D + M) P

S = Significance weighting

E = Extent

D = Duration

M = Magnitude

P = Probability

The **significance weightings** for each potential impact are as follows:

- » < 30 points: Low (i.e. where this impact would not have a direct influence on the decision to develop the area).
- » 30-60 points: medium (i.e. where the impact could influence the decision to develop in the area unless it is effectively mitigated).
- » >60 points: High (i.e. where the impact must have an influence on the decision process to develop in the area).

Assessment of impacts must be summarised in table format. The rating values as per the above criteria must also be included. Complete a table and associated ratings for **each** impact identified during the assessment. The maximum value that can be achieved is 100 Significance Points (SP). Environmental effects were rated as follows:

Significance	Environmental Significance Points	Colour Code
High (positive)	>60	H
Medium (positive)	30 to 60	M
Low (positive)	<30	L
Neutral	0	N
Low (negative)	>-30	L
Medium (negative)	-30 to -60	M
High (negative)	< -60	H